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ROYAL BOTANIC GARDENS, KEW

XX—A KEY TO THE SPECIES OF DEUTZIA SECT. MESODEUTZIA.

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While investigating *Deutzia rubens* Rehd. and its allies for an article in the current number of the "Botanical Magazine" (tab. 9362), the writer found that one or two species were undescribed, whilst certain readjustments in the conception of others seemed necessary. An exhaustive revision of this group scarcely seems called for so soon after the treatments of Rehder (in Sargent, Pl. Wils. **1**, 14 : 1911) and Engler (Natürl. Pflanzenfam. ed. 2, **18a**, 199 : 1930), but it was thought that publication of the results arrived at in the form of a key might be useful. Brief diagnoses, synonymy and citation of specimens of the new species are appended.

The arrangement attempts to indicate, as far as possible, a progression from the relatively simple to the more advanced. Thus the species with simple, subulate stamens precede those in which the filaments are predominantly or invariably winged and toothed. *Deutzia mollis* Craib probably represents the most primitive type, the leaves being in general the largest in the section, whilst the hairs of the dense pubescence are not reduced to a stellate base as in the majority of species. *D. rubens* Rehd. shows the most advanced staminal structure, for the two lateral teeth of the shorter filaments (*i.e.*, the inner whorl) are confluent behind the anther and produced a long way beyond it, so that the anther appears to be borne half-way up the ventral face of the filament. A tendency towards this can also be seen in *D. Hookeriana* (Schneid.) Airy-Shaw. The remaining species are more or less intermediate between these two extremes.

Key to Species.

Filaments all simple, subulate :

Leaves softly and densely tomentose-pubescent below, rather large; midrib below with long spreading simple hairs; inflorescence pubescent (Hupeh).....1. *D. mollis* Craib

Leaves stellate-lepidote below, not pubescent, smaller on the average :

Calyx and inflorescence stellate-lepidote; stellate hairs of lower surface of leaves with 5–8 rays, those of upper surface with 4–5, rarely 6, rays :

Stellate hairs of leaves (and often of inflorescence) with elongate erect central ray (Shensi, ? Shansi, ? Kansu)....
2. *D. micrantha* Engl.

Stellate hairs adpressed, without long erect central ray (Manchuria, Korea)...6. *D. amurensis* (Regel) Airy-Shaw

Calyx and inflorescence quite glabrous ; stellate hairs of lower surface entirely absent, those of upper surface 3–5-rayed (Manchuria, Korea, ? Chihli, Shantung).....
3. *D. glabrata* Kom.

Filaments variable in the same inflorescence or even flower, either simply subulate or more often shouldered or with a blunt or acute tooth on either side towards apex (unknown in no. 4) :

Midrib below with long, simple, laterally spreading hairs at least towards base ; stellate hairs of upper surface mostly 5–6-rayed ; short, scattered, spreading, simple hairs on branches of inflorescence :

Stellate hairs with elongate erect central ray (cf. also *D. micrantha*), mostly 5-rayed (Korea)...4. *D. kongoa* Airy-Shaw

Stellate hairs without such central ray, mostly 6-rayed (Chihli, ? Mongolia, ? Kansu, ? Honan).....5. *D. parviflora* Bunge

Midrib devoid of such hairs below ; stellate hairs of upper surface mostly 4–5-rayed ; inflorescence without simple spreading hairs :

Leaves mostly ovate, about twice as long as broad, very pale below ; stellate hairs on lower surface uniform, scattered ; inflorescences comparatively lax (Manchuria, Korea).....
6. *D. amurensis* (Regel) Airy-Shaw

Leaves mostly lanceolate, at least three times as long as broad, more or less concolorous ; stellate hairs on lower surface exceedingly dense, of two kinds, the smaller very minute and numerous, contiguous, the others considerably larger and fewer ; those on the upper surface often with an elongate erect central ray ; inflorescences dense and compact (only known in cultivation ; ? N. China).....
7. *D. compacta* Craib

Filaments all 3-dentate at apex (lateral teeth sometimes confluent) :

Lateral teeth of filaments not or scarcely exceeding the anther, often truncate or obtuse, never confluent ; central antheriferous tooth of longer filaments (outer whorl) often elongate, up to 2 mm. long :

Stellate hairs below 6–12-rayed (W. Himalaya).....
8. *D. corymbosa* R. Br.

Stellate hairs below 3–5-, mostly 4-rayed (W. Himalaya).....
9. *D. staurothrix* Airy-Shaw

Lateral teeth of filaments generally much exceeding the anther, those of the shorter filaments (inner whorl) generally confluent so that the anther appears to be borne ventrally half-way up the filament, which is then very shortly bifid or subentire at the (apparent) apex ; stellate hairs of upper leaf-surface 3–5-rayed :

Stellate hairs of lower surface very dense, small, 5–9-rayed ; inflorescence often scabrid owing to the stellate hairs being

stipitate on conical papilliform projections ; lateral teeth of shorter filaments only partially confluent (Yunnan, E. Himalaya).....10. *D. Hookeriana* (Schneid.) Airy-Shaw

Stellate hairs of lower surface very sparse to moderately dense, larger, 3–5-, more rarely 6-rayed ; inflorescences not scabrid ; lateral teeth of shorter filaments almost completely confluent (Shensi, Hupeh, Szechuan).....
11. *D. rubens* Rehd.

DIAGNOSES OF NEW SPECIES.

4. **Deutzia kongoa** *Airy-Shaw*, sp. nov. ; a *D. parviflora* Bunge pilis stellatis radio centrali erecto elongato plerumque praeditis, paginae superioris saepius 5-radiatis quam (ut plerumque in *D. parviflora*) 6-radiatis distincta.

KOREA : Prov. Kogen. Kongo-san, thickets, 1333 m., 5 July 1918, *Wilson* (Arn. Arb.) 10,431 : " Bush 2–4 ft., common." Ibid., cliffs and thickets, 666 m., 5 July 1918, *Wilson* (Arn. Arb.) 10,434 (type, Herb. Kew.) : " Bush 3–5 ft., common."

Both these specimens are unfortunately in fruit only. The species agrees with *D. parviflora* in the possession of long, spreading, apparently simple hairs at the side of the midrib on the lower leaf-surface : these often extend to the lateral nerves and sometimes even to the intervening tissue. Traces of minute stellate rays are generally discernible at their base. Neither *D. parviflora* nor *D. amurensis* ever seem to develop an erect central ray on the hairs of the upper surface.

6. **Deutzia amurensis** (*Regel*) *Airy-Shaw*, sp. nov. ; *D. parviflorae* Bunge proxima, sed differt foliis subtus magis discoloribus et saepe sublucidis et imprimis costa basin versus pilis simplicibus patentibus omnino carente, filamentis saepius edentatis.

D. parviflora var. *amurensis* Regel, Op. Fl. Usur. Stran. 66, t. v, fig. 7–13 (1862) (Mém. Acad. Sci. St. Pétersb. sér. 7, **4**), et in Vyestn. Ross. Obschtsch. Sadov. [**3**], 340, t. 96 (1862), et in Gartenfl. **11,** 278, t. 370, fig. 4–12 (1862).

D. parviflora Maxim. Prim. Fl. Amur. 110 (1859) (Mém. Acad. Imp. Sci. St. Pétersb. sér. 6, **9**), et Rev. Hydrang. 33 (1867) (Mém. Acad. Imp. Sci. St. Pétersb. sér. 7, **10**), *p.p.* ; Korshinsky in Acta Horti Petrop. **12,** 338 (1892) ; Komarov, Fl. Manch., in Acta Horti Petrop. **22,** 431 (1903) ; Nakai in Journ. Coll. Sci. Tok. **26,** 222 (1909) et **31,** 486 (1911) ; Yabe, Enum. Pl. South Manch. 61 (1912) ; Nakai in Bot. Mag. Tok. **35,** 96 (1921) ; Mori, Enum. Pl. Cor. 182 (1922) ; Chung, Cat. Trees & Shrubs China, 66 (1924), *p.p.* ; Nakai, Fl. Sylv. Kor. **15,** 65, t. xx (1926).

? *D. parviflora* var. *Bungei* Franch. in Morot, Journ. de Bot. **10,** 283 (1896).

MANCHURIA. Amur, *Maximowicz* (type) ; ad fl. Amur, inter Ust-Strelotschnaja et ostia fl. Dseja, 1857, *Radde* ; Pei-ling, Mukden to Yaloo River, ? 1885, *Rev. J. Webster* 127 ; between

Mukden and Tung-che-hsien, May-Aug. 1886, *James*; Chang-pei-shan, 300–2250 m., May-Aug. 1886, *James*; in cedretis jugis merid. vallis fl. Chingan, 19 June 1895, *Komarov* 836; districtus Ninguta, fl. Sui-fun, vallis Van-lu-gau, 19 June 1896, *Komarov* 836; fl. Jalu-dsian super., vallis Tadin-don, 22 June 1897, *Komarov* 838.

KOREA: Prov. Hei-an North. French Mine, Taiyudo, 160–1000 m., 15 June 1917, *Wilson* (Arn. Arb.) 8605: "Bush 3–6 ft., flower white; abundant everywhere." Cliffs, Pakadong, Unsan district, 1 Sept. 1918, *Wilson* (Arn. Arb.) 10,687: "Bush 2–4 ft., common."

Of the type specimens of Regel's var. *amurensis*, which were collected by Maximowicz and Maack at the mouth of the Sungari and Ussuri rivers, in the Amur region, I have seen only a fruiting example collected by Maximowicz. True *Deutzia parviflora*, however, is apparently confined to Chihli* and adjacent Mongolia, and therefore does not occur in the area occupied by *D. amurensis*. The presence or absence of simple, spreading hairs on either side of the midrib, at least towards the base, on the lower leaf-surface is a constant character for distinguishing these two species in all the specimens examined.

Regel states that Maack sent home seeds, but that none had so far germinated. Cultivated specimens received from T. Smith, Daisy Hill Nursery, Newry, and from W. E. Gumbleton, Queenstown, Ireland, in April 1896, are preserved in the Kew Herbarium. The source of these is unknown. A plant grown in the Arnold Arboretum, specimens of which were distributed under the name *Deutzia Lemoinei compacta*, is also referable to *D. amurensis*.

8. **Deutzia Hookeriana** (*C. K. Schneider*) *Airy-Shaw*, sp. nov.; a *D. rubente* Rehd. et *D. corymbosa* R. Br. (cui proxima) foliis subtus dense (nec sparsius quam supra) stellato-lepidotis distinctissima.

Deutzia corymbosa C. B. Clarke in Hook. fil. Fl. Brit. Ind. **2**, 406 (1878), *pro parte*.

D. parviflora var. *purpurascens* Franch. in Morot, Journ. de Bot. **10**, 283 (1896) (nec *D. purpurascens* Rehd., quae *D. discolor* var. *purpurascens* Franch.).

D. corymbosa var. *Hookeriana* C. K. Schneider in Mitt. Deutsch. Dendrol. Gesellsch. **13**, 184 (1904).

D. corymbosa var. *purpurascens* C. K. Schneider, *l.c.* 185 (1904).

D. corymbosa var. *yunnanensis* "Franch." ex Rehd. in Sarg. Pl. Wils. **1**, 23 (1911); "Franch." ex Chung, Cat. Trees & Shrubs of China, 65 (1924): sphalm. pro var. *purpurascens* Franch.

D. hypoglauca Rehd. in Journ. Arn. Arb. **5**, 158 (1924), quoad *Delavay* 986, non Rehd. in Sarg. Pl. Wils. **1**, 24 (1911).

NEPAL. Tambur river, 2100–3000 m., 22 Nov. 18—, *J. D. Hooker*.

*I have not been able to examine the specimens from Honan referred to *D. parviflora* by Rehder in Journ. Arn. Arb. **5**, 157 (1924).

Sikkim. Choongtam, 2100–3000 m., 23 May 1849, *J. D. Hooker*: "Arbusc. 20 ped., fl. white." Lachen, 2100 m., 26 May 1849, *J. D. Hooker* (type, Herb. Kew.): "Frutex laxe ramosus 10 ped." Ibid., 6 July 1849, 2700–3000 m., *J. D. Hooker*: "Frutex 8–12 ped." Ibid., 3300–3600 m., 12 July 1849, *J. D. Hooker*.

Bhutan. Towards Chuk, in woods, 1950 m., *Griffith* 2045 (Kew distrib. no. 2450).

Tibet. Chumbi, 29 June 1878, *Dungboo*: "Shrub 5 ft., flower white." Yatung, 27°51′ N., 88°35′ E., 1897, *Hobson*. Chumbi Valley below Rinchhengong and about Assam, July 1904, *Walsh* 162. Rongshar Valley, side of rocky gorge, 2850 m., 24 June 1924, *Hingston* 177: "Flower white." Ibid., amongst boulders in bed of gorge, 3300 m., 23 June 1924, *Hingston* 278: "Flower white." Ibid., bed of rocky gorge, 3300 m., 21 June 1924, *Hingston* 312: "Flower white." Nyima La, in forest, or in thickets lower down the valley, 3000–3300 m., 1 July 1924, *F. K. Ward* 5886: "Shrub of 6 ft.; flowers pale pink."

Upper Burma. Without exact locality, Oct. 1925, *Forrest* 27,530.

Yunnan. Ad basin montis Tsang-chan supra Tali, 3000 m., 1883–1885, *Delavay* 986. In shady forests on the Mekong-Salwin divide, 27°54′ N., 98°50′ E., 2400 m., July 1921, *Forrest* 19,646: "Shrub of 1–2½ ft. Flowers white, flushed purplish exterior."

The segregation of this species from *D. corymbosa* affords yet another example of the distinctness of the east and west Himalayan floras. The occurrence of pairs of allied vicarious species in these two regions is probably more frequent than that of one species common to both.

10. **Deutzia staurothrix** *Airy-Shaw*, sp. nov.; a *D. corymbosa* R. Br. foliorum pilis stellatis utriusque paginae cruciformibus 4-radiatis, rarius 3- vel 5-radiatis, statim dignoscenda.

N. W. Himalaya. Without exact locality, temperate region, 2100–3000 m., *Thomson* (type, Herb. Kew.). Upper Chenab Valley, Rowli, 2550 m., 29 Aug. 1879, *R. Ellis* 429. Chamba, 1880, *R. Ellis* 429. Chenab Valley, Phindru, 2250 m., 15 June 1881, *R. Ellis* "1220–1221" (sic !). Kulu-Lahaul, Pulga, 7 June 1888, *Drummond* 22,828. Chamba, Alwar, 2400 m., 25 June 1917, *Stewart* 2436.

Vernacular name: *Bhatti* (R. Ellis).

Although in general facies this plant is indistinguishable from *D. corymbosa*, a glance at the indumentum of the leaves through a low-powered lens is sufficient to identify it, for the rather large, almost uniformly cruciform stellate hairs are quite unlike the smaller many-rayed structures found in that species. No additional character for separating them, however, has yet been detected. *D. staurothrix* may therefore be regarded with some probability as a "young," incipient species which has arisen, possibly by mutation, directly from *D. corymbosa*.

XXI—NEW TREES AND SHRUBS FROM TROPICAL AFRICA: III.* A. C. Hoyle & H. Dunkley.

Homalium rhodesicum *Dunkley*, sp. nov. [Samydaceae]; affinis *H. Wildemanniano* Gilg, sed foliis fere latis quam longis, nervis lateralibus paucioribus differt.

Arbor mediocris vel alta, ramulis novellis teretibus striatis subglabris lenticellosis pallide incano-griseis. *Folia* coriacea, in sicco purpurea, tenuiter reticulata, 4–7 cm. longa, 3–5 cm. lata, latissime elliptica vel ovato-oblonga, rare subrotundata, apice breviter acuminata vel rotundata, basi late et obtuse cuneata vel truncata, supra glabra nitida, infra opaca brunneo-rubra, in costa et axillis nervorum pubescentia; nervi laterales utrinque 6, costa nervisque elevatis, margine crasse et irregulariter crenato-serrato, dentibus apice glandulosis. *Paniculae* circiter 8 cm. longae, leviter ramosae, pauciflorae, ramulis puberulis; flores subsessiles. *Sepala* 7, ovata, acuta, 4 mm. longa, puberula, valvata, ciliata. *Petala* sepalis similia. *Glandulae* disci 6, magnae, tomentosae, sepalis oppositae. *Stamina* ternaria, petalis opposita; antherae versatiles; filamenta filiformia, basin versus applanata. *Staminodia* 6, minuta. *Ovarium* uniloculare, intus pilis crispatis implicatis repletum, extra longe pilosum, in tubo semi-submersum, placentis 3 ab apice suspensis, *ovulis* pendulis circiter 6; stylus trifidus. *Fructus* non visus.

South Tropical Africa. Northern Rhodesia: Kafue, *J. D. Martin* 66, type in Kew Herb. and Imperial Forestry Institute Herb., Oxford; "Medium-sized tree, river bank," Nov. 1931; vernacular name "Mulunga." Kafue Gorge, *D. Stevenson* 211, "Big tree, vernacular name 'Mwendamalonga' (I. Tok.)," July, 1931. Kafue Gorge, *Burtt Davy* 20808, "Tree, bark smooth, grey," August, 1929.

Dombeya praetermissa *Dunkley*, sp. nov. [Sterculiaceae]; inter species *D. Kirkii* K. Schum. et *D. Mupangae* K. Schum. in sectione *Xeropetali*, foliis parvis, ambitu rotundatis vel late obovatis, basi leviter inaequaliter cordatis, floribus multo minoribus valde distincta.

Arbor circiter 6 m. alta, ramulis petiolis et ramis florentibus subfloccoso-tomentosis, *foliis* orbicularibus vel subovatis ad 8 cm. longis 7 cm. latis apice obtusis rotundatis vel obscure 3-lobatis, basi leviter inaequaliter cordatis quinquenervis crenulatis supra sparse stellato-tomentellis sicco brunneo-rubris subtus densius stellato-ferrugineo-tomentosis, petiolo tereti 1·5–2·5 cm. longo. *Flores* albi, odorati, in cymas terminales dispositi, ramulis et pedicellis longe pilosis. *Sepala* 5, ovato-acuminata, extra longe strigosa, intus glabra, 6 mm. longa. *Petala* 5, obliqua, inaequaliter bilobata, 8 mm. longa, 5 mm. lata, venulis prominentibus, minute ciliata. *Stamina* 15, filamentis basin versus applanatis. *Staminodia* 5,

*Continued from K.B. 1933, 174.

Homalium rhodesicum Dunkley (× $\frac{2}{3}$). 1, Section of flower (× 4).

stamina superantes, apicem versus dilatata, 6 mm. longa. *Styli* 3, supra medium connati, reflexi, sparse pilosi. *Ovarium* globosum, 3-loculare, dense strigosum ; ovula in loculis 2. *Fructus* non visus.

East Tropical Africa. Kenya Colony : Kilifi Coast, *R. M. Graham* 350 type in Kew Herb. & Imp. Forestry Institute Herb. Oxford, " Small tree 20 ft., flowers white and scented, bark with a fairly strong fibre, common at Kwale." Vernacular name " Mbwale " (Swa.). *Wakefield* Nyika, between Lamu & Witu. *Whyte* s.n. *Gardner* 1452, " Savannah country on coast, south of Mombassa, small tree with white flowers, Mbwale (Swa.). Napier 1012, Voi, alt. 2100 ft. Vernacular name " Mukeu " (Kidabida). Tanganyika : Usambara, *Holst* 3180, June 1893.

Berlinia confusa *Hoyle*, sp. nov. [Caesalpiniaceae] ; affinis *B. auriculatae* Benth., a qua calycis tubo lobisque extus pubescentibus, ovario dense tomentoso, pedicellis longioribus, bracteolis longioribus et latioribus recedit.

Arbor, ramulis novellis striatis ferrugineo-puberulis. *Folia* paripinnata ; petiolus 1·5–2·5 cm., rhachis 3·5–5 cm. longus, ferrugineo-puberulus ; foliola 3-jugata, opposita vel subopposita, 4–9 cm. longa, 3–4·5 cm. lata, inferiora ovato-rotundata, reliqua elliptica vel obovata, apice vix acuminata, obtusa et emarginata, basi rotundata vel brevissime cuneata, supra nitidula, reticulata, glabra, minutissime punctulata, infra opaca, sparse puberula ; nervi laterales utrinque 5–7 ; petioluli 5–7 mm. longi, rugosi, puberuli. *Paniculae* terminales et axillares, circiter 15 cm. longae et latae, basi laxe et longe ramosae, ramis paucifloris racemosis usque ad 13 cm. longis, ferrugineo-tomentellae, sulcatae ; bracteae rotundatae, tomentosae, caducissimae ; pedicelli ad 4 cm. longi, sulcati, fulvo-tomentosi ; bracteolae 30–35 mm. longae, 9–15 mm. latae, extus fulvo-tomentosae, intus densissime pubescentes. *Calycis* tubus 10 mm. longus, pubescens, lobis 12–14 mm., longis 2·5–3·5 mm. latis extus medio pubescentibus sparse ciliatis intus glabris. *Petalum* posterius 4·5–5 cm. longum, 4 cm. latum, ungue 2–2·5 cm. longo extra cum limbo orbiculato emarginato dense pubescente. *Stamina* petalo aequilonga, basin versus pubescentia. *Ovarium* stipitatum, 6–8 mm. longum, ferrugineo-tomentosum, stylo filiforme glabro 4·5–5 cm. longo. *Fructus* non visus.

West Tropical Africa. Nigeria : Calabar, " In high forest," *J. Smith* 54, type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford, with flowers March, 1931. Cameroons : Bipinde, *Zenker* 2332.

Vernacular name (Benin) : " Ekpagoi."

Millettia Kennedyi *Hoyle*, sp. nov. [Papilionaceae] ; affinis *M. coruscanti* Dunn, a qua inflorescentia tenuiore ramosiore, floribus minoribus, foliolis haud acute acuminatis recedit.

Arbor (?) riparia, ramulis teretibus brunneis minute sericeis mox dense lenticellatis. *Folia* 15–20 cm. longa, 5–7-foliolata,

exstipellata ; petioli 2–4 cm., rhachides 4–5 cm. longi, fulvo sericei ; petioluli 2·5–3·5 mm. longi, rugulosi, sericei ; foliola 4–10 cm. (plerumque 6–8 cm.) longa, elliptica vel oblongo-elliptica vel oblanceolata vel obovata, apice obtusa vel breviter acuminata, acumine obtuso vel retuso, mucronata, basi rotundata vel breviter cuneata, supra glabra, nitidula, in sicco rubescentia, costa cum venis impressis, infra aureo-fulvo-sericea (effulgentia), laxe reticulata, costa nervisque prominentibus ; nervi laterales utrinque 8–10, arcuati et crebre conjuncti, nervis lateralibus secundi ordinis intercalariis conspicuis. *Paniculae* terminales, amplae, ferrugineo-sericeae, 25–30 cm. longae, in parte inferiore ramis longis (ad 20 cm.) breviter ramulosis, in parte superiore axi breviter ramuloso (ramulis plerumque 2–2·5 cm. longis) ; pedicelli 1·5–2 mm. longi, ferrugineo-sericei ; bracteolae minutae, ovatae, acutae, carinatae. *Calyx* 7–8 mm. longus, ferrugineo-sericeus ; tubus 3–4 mm. longus, lobis lanceolatis acutis aequilongus ; lobi superiores usque ad medium connati. *Vexillum* 11 mm. diametro, orbiculare, breviter emarginatum, subauriculatum, extra glabrum, intus super basin transverse callosum et pubescens, ungue 2 mm. longo ; carina 12–13 mm. longa, alis leviter superans, glabra. *Ovarium* 5–6 mm. longum, fulvo-tomentosum, circiter 5-ovulatum ; stylus circiter 11 mm. longus, pubescens. *Fructus* non visus.

West Tropical Africa. S. Nigeria : Sapoba (Jameson River), *J. D. Kennedy* 1841, type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford ; Eket, *P. A. Talbot* 3343.

Hippocratea hirtiuscula *Dunkley*, sp. nov. [Hippocrateaceae] ; affinis *H. indicae* Willd., a qua foliis minoribus lanceolato-ellipticis puberulis, ramulis novellis petiolis et inflorescentia pubescentibus recedit.

Frutex scandens, pubescens, ramulis 4-angulatis. *Stipulae* geminatae, sub-persistentes, filiformes. *Folia* anguste obovato vel oblongo-elliptica, minute papilloso-puberula, 2–4·5 cm. longa, 0·5–2 cm. lata, costa nervisque pubescentibus utrinque elevatis, nervis lateralibus utrinsecus 5–8, margine reflexo serrulato ciliato, petiolo crasso tomentoso 5–7·5 mm. longo. *Cymae* axillares terminalesque, multiflorae, foliis superantes, axi, pedunculis et pedicellis dense et breviter pubescentibus, bracteis deltoideis 0·5 mm. longis, bracteolis minutis puberulis. *Flores* minuti, 1 mm. longi, pedicello aequantes. *Sepala* 5, imbricata, tomentella, 0·5 mm. longa. *Petala* 5, imbricata, oblonga, glabra, 1·5 mm. longa. *Discus* tenuis, inconspicuus. *Stamina* 3, filamentis brevibus latis compressis, antheris uniloculari-bus dorsifixis. *Ovarium* glabrum, 3-lobatum, 3-loculare, stylo brevissimo, stigmate integro. *Ovula* in loculis 2. *Fructus* compressus, coriaceus, oblongus usque obovato-oblongus, apice obtusus, circa 2·5 cm. longus, 1·3 cm. latus. *Semina* in loculo duo, alata ; ala 2 cm. longa, 6 mm. lata.

South Tropical Africa. Northern Rhodesia : Bombwe Forest *J. D. Martin* 354, type, in Kew Herb. & Imp. For. Inst. Herb. Oxford.

Vernacular name "Naminda" (Tok. Sik.) flowering November.

The fruits are described from *Martin* 251, said to be collected from the type in June.

Salacia owabiensis *Hoyle*, sp. nov. [Hippocrateaceae]; affinis *S. euryoidi* Hutch. et M. B. Moss, a qua floribus minoribus brevioribus, sepalis haud fimbriatis, foliis integerrimis recedit.

Frutex scandens, glaber, ramulis teretibus nigrescentibus tenuiusculis. *Folia* opposita vel subopposita, utrinque tenuiter reticulata, 8–12 cm. longa, 5–7 cm. lata, late elliptica vel oblongo-elliptica, abrupte breviterque acuminata, basi late cuneata, supra viridia leviter nitidula, infra pallidiora; nervi laterales utrinque 5–6, tenuissimi, valde arcuati, infimi sub-basales, margine nervato; petiolus 7–9 mm. longus, tenuiusculus, canaliculatus. *Fasciculi* multiflori, axillares, brevissime pedunculati vel subsessiles (pedunculi ad 4 mm. longi, crassi); bracteae minutae, ovatae, acumine fimbriato; pedicelli 1·2–1·5 cm. longi, tenuissimi. *Sepala* 4, valde inaequalia, tandem reflexa, majora latissime ovata, usque ad 3 mm. longa et 4 mm. lata, minora 1 mm. longa, 1·5 mm. lata. *Stamina* 3; filamenta 3–3·5 mm. longa, subulata, compressa. *Ovarium* depresso-ovoideum; stylus 4 mm. longus, subulatus, stigmate parvo.

West Tropical Africa. Gold Coast: Owabi, *F. J. Lyon* 2641, type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford, with flowers December, 1932. Climber in deciduous forest.

Fagara trijuga *Dunkley*, sp. nov. [Rutaceae]; affinis *F. melanacanthae* Engl., sed foliolis paucioribus 3-jugatis subsessilibus apice breviter acuminatis haud caudatis, paniculis multo minoribus facile distinguitur.

Arbor parva, ramulis glabris sparse armatis; spinae rectae, usque ad 1 cm. longae. *Folia* imparipinnata, 15–25 cm. longa, rhachide breviter armato cum petiolulis sparse ferrugineo-tomentosis; petioli circiter 6 cm., rhachides 15–20 cm. longi; petiolulus folioli terminalis 0·5–1·5 cm. longus; foliola 3-juga, subsessilia, chartacea, opposita vel fere opposita, 6–9 cm. longa, 3–5 cm. lata, ovata vel ovato-oblonga, apice acuta vel breviter acuminata, basi inaequaliter rotundata, inferiora nonnunquam minora, supra viridia, glabra, costa breviter armata, nervis utrinque subprominentibus, subtus pallida, sparse pubescentia, dense glanduloso-punctulata, margine crenulato; nervi laterales utrinque 10–12. *Paniculae* usque ad 18 cm. longae, ramis patentibus, rhachide et ramis ferrugineo-tomentellis, floribus in cymulas paucifloras dispositis unisexualibus, pedicellis 1 mm. longis; bracteae et bracteolae minutae, ovatae, ciliatae. *Sepala* 4, ovato-rotundata, glabra, fructu persistentia 1 mm. longa. *Petala* 4, oblonga, obtusa, glabra, glandulosa, 3·5 mm. longa. *Stamina* 4, filamentis 4 mm. longis complanatis, antheris versatilibus. *Discus* pulviniformis, glaber. *Ovarium abortivum* obscure 4-lobatum. *Fructus* 5 mm. longus, glaber, subglobosus, pericarpio rugoso dense

glanduloso-punctato. *Semina* reniformia solitaria, versus apicem loculi suspensa.

South Tropical Africa. Northern Rhodesia: Bombwe, *J. D. Martin* 137, 480 (fls.), 493 (fruit), all from type, in Kew Herb. and Imp. For. Inst. Herb. Oxford; "Shrub to small tree 10′ × 5″, spiny, common in *Baikiaea* forests in the dense 'Mutemwa' undergrowth"; flowers collected in Nov., fruits on Feb. 27th, 1933. Vernacular name "Chongwemaura" (Tok.).

East Tropical Africa. Tanganyika: Kazikazi, Mayoni Dist. at 4200 ft., *B. D. Burtt* 3552 "straggling loose coppice shrub to 10 ft., spines straight, unlike any other local *Fagara*."

Pachylobus paniculatus *Hoyle*, sp. nov. [Burseraceae]; affinis *P. Barteri* Engl., a qua panicularum ramis racemiformibus nec ramulosis, floribus paucioribus plerumque singulatim dispositis, pedicellis crassioribus, petalis longioribus subacutis squamis magnis argenteis munitis, recedit.

Arbor 16 m. alta, ramulis novellis striatis ferrugineo-stellato-lepidotis. *Folia* imparipinnata, 2–3-jugata, foliolis oppositis vel novellis irregularibus; petioli 2–6 cm. longi, sparse lepidoti, striati; rhachides 2–6·5 cm. longi; petioluli plerumque 1–2 cm. longi (petiolulus folioli terminalis usque ad 3 cm. longus), tenuiusculi; foliola 6–16 cm. longa, 3–6·5 cm. lata, elliptica vel lanceolato-elliptica, lateralia plus minusve falcata, apice obtuse acuminata, basin breviter cuneata vel rarissime rotundata, utrinque reticulata, supra glabra, nitidula, infra venulosa, sparsissime et minute stellato-lepidota, costa conspicue et alte striata; nervi laterales 7–12, valde arcuati. *Paniculae* ad 30 cm. longae, 20 cm. latae, terminales (et axillares?), ramis longissimis tenuiusculis 20–28 cm. longis dense stellato-lepidoto-pubescentibus; bracteae et bracteolae caducissimae; pedicelli 2–3 mm. longi, 1 mm. lati, valde costati, dense stellato-lepidoti. *Sepala* coriacea, 1·5 mm. longa, ovata, obtusa, extus ferrugineo-lepidota, intus fere glabra. *Petala* 4–4·5 mm. longa, ovata, subacuta, extra dense argenteo-lepidota, intus minutissime glanduloso-papillosa. *Stamina* 6, sub margine disci disposita; filamenta subulato-lanceolata, 1·5 mm. longa, furfuracea; antherae oblongo-ovoideae, minutissime glanduloso-papillosae, 1 mm. longae. *Discus* magnus, carnosulus, albidus. *Ovarium* depresso-ovoideum, 1·5 mm. diametro, stellato-pubescens; stigma magnum, plus minusve 2–3-lobatum, albidum, obscure lepidotum. *Fructus* non visus.

West Tropical Africa. Gold Coast: Kintampo, *Vigne* 2535, type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford; "Tree in fringing forest, 50 ft. high and 5 ft. girth; altitude 1100 ft."; with flowers, Oct. 1932.

Canthium Martinii *Dunkley* sp. nov. [Rubiaceae]; affinis *C. malacocarpo* (K. Schum. et K. Krause) Bullock, sed foliis herbaceis basi breviter cuneatis haud rotundatis, fasciculis multifloris ex

axillis foliorum delapsorum orientibus, cortice ramulorum papyraceo et pallide cinereo differt.

Frutex scandens, glaber, ramis teretibus angulo recto patentibus ramulis lateralibus brevibus 2-foliatis, cortice cinereo usque cinereo-brunneo. *Folia* elliptica vel ovato-elliptica, apice obtuse vel late et brevissime acuminata, basi subrotundata vel breviter cuneata, 5–7 cm. longa, 2–4 cm. lata, glabra, nervis lateralibus utrinsecus circiter 4 subtus subprominentibus ; petioli circiter 7 mm. longi. *Stipulae* caducissimae, basim versus ciliatae, triangulari-subulatae, 2 mm. longae. *Fasciculi* multiflori (30–50), pedicellis 7·5 mm. longis parce puberulis, bracteis minutis puberulis. *Calyx* parvus, denticulatus vel truncatus. *Corolla* 5 mm. longa, 4-loba, tubo 3 mm. longo, lobis reflexis 2 mm. longis. *Stamina* 4, filamentis brevibus, antheris oblongo-ellipticis 1·5 mm. longis. Ovarium 2-loculare ; ovula in loculis 1, pendula ; stylus glaber, filiformis, stigmate oblongo alte sulcato, longe exsertus. *Fructus* non visus.

South Tropical Africa. Northern Rhodesia : Bombwe, *J. D. Martin* 135/31 ; November, 1931 ; "A typical many stemmed Teak Forest woody climber." Type in Kew Herb., and Imperial Forestry Inst. Herb., Oxford.

Vernacular name " Sikanganteme " (Tok.).

Bonamia Viġnei *Hoyle*, sp. nov. [Convolvulaceae] ; affinis *B. cymosae* Hallier f., a qua sepalis obtusis nec acute acuminatis, fructu multo majore, foliis longioribus haud sericeo-tomentellis nervis lateralibus paucioribus, pilis medifixis majoribus, recedit.

Frutex scandens, tenuis, novellis pilis longis fulvis plerumque medifixis crispatis munitis ; ramuli tenues, teretes, virides, pubescentes, novellis tomentosis. *Folia* subcoriacea, 5–12 cm. longa, 2–5 cm. lata, oblongo- vel lanceolato-elliptica vel plerumque obovata, apice late et obtuse vel acute acuminata, mucronata, basi subcordata vel rotundata, utrinque primum sparse pilosa margine ciliato, supra tandem glabra, costa cum nervis impressis, infra laxe reticulata, furfuracea, costa tomentosa nervis pubescentibus ; nervi laterales tenues 5–7 vel rarissime 9 ; petioli crassi, 3–6 mm. longi, tomentosi. *Paniculae* cymosae, terminales, densae, subcorymbosae, subsessiles, circiter 5 cm. diametro, et cymae axillares, pauciflorae, subsolitariae, 2–3 cm. latae, omnino dense fulvo-tomentosae ; bracteae 2 mm. longae, subulatae, tomentosae, deciduae ; bracteolae ellipticae ; pedicelli 4–6 mm. longi, tomentosi. *Sepala* 4–7 mm. longa, 3–5 mm. lata, subaequalia, elliptica vel latissime elliptica, extra tomentosa, intus glabra, fructu accrescentia, suborbicularia, 7 mm. diametro, glabrescentia. *Corollae tubus* 5–7 mm. longus, 2–3 mm. latus, anguste campanulatus, intus in fauce villosus ; lobi tubo aequilongi forma variabiles, elliptici vel lanceolati vel lineari-lanceolati, apiculati, extra adpresso-tomentosi, intus glabri, margine ciliati. *Stamina* in ore tubi disposita, exserta ; filamenta praeter basim glabra, corollae lobis fere aequilonga ;

Crossandra spinescens Dunkley. 1, Flower showing bracts and bracteoles (× ⅔); 2, longitudinal section of flower (× 3); 3, Calyx and bracteoles (× 2); 4, fruiting head (× ⅔); 5, Capsule (× 2); 6, seed (× 5).

antherae ovoideae, 2 mm. longae. *Ovarium* glabrum, ovoideum, 1 mm. diametro ; styli 2, liberi, 13 mm. longi, filiformes ; stigmata reniformia, 1 mm. diametro. *Fructus* capsularis, coriaceus, brunneus, oblique ovoideus, apiculatus, 8–10 mm. diametro, in calyce accrescenti pateriformi dispositus, valvis 4 dehiscens, extra rugulosus, nitidulus. *Semina* 2, vel rarius 1, oblique ovoidea, crassa, 6–8 mm. diametro, sanguinea, glanduloso-papillosa ; hilum curvatum, tenue, subbasale ; cadentia semina placentam biconcavam nigram persistentem relinquentia.

West Tropical Africa. Gold Coast : Tiasi, *Vigne* 1387, type, in Kew Herb., and Imperial Forestry Institute Herb., Oxford, with flowers, October, 1928 ; Owabi, *F. J. Lyon* 2631, with flowers and fruits, December, 1932 ; "A thin liane in closed forest, flowers white ; altitude 650 ft." ; " Climber in deciduous forest."

Crossandra spinescens *Dunkley*, sp. nov. [Acanthaceae] ; affinis *C. Greenstockii* S. Moore, a qua bracteis glabrescentibus longispinosis, calycis segmentis longioribus, foliis minoribus lanceolato-ellipticis recedit.

Frutex, ramis et ramulis breviter et dense pubescentibus, alabastris subulatis albo-sericeo-tomentosis. *Folia* utrinque sparse puberula, chartacea, lanceolato-elliptica, 6–10 cm. longa, 2–4 cm. lata, apice acuta, basi angustata petiolo decurrentia, supra viridia, nervis obscuris, infra pallidiora, costa nervisque subprominentibus ; nervi laterales utrinque 8–9, tenues, arcuati. *Spicae* terminales, densae, breviter pedunculatae, usque ad 8 cm. longae, bracteis obovatis dense breviterque pubescentibus apicem versus dentatis, dentibus circiter 10 spinoso-subulatis, 5–7 mm. longis, nervis 5–7 prominentibus, margine ciliatis, bracteolis subulato-linearibus calycem aequantibus. *Calycis segmenta* 5, scariosa, postico apice dentibus 2 innocuis puberulis munito 1·2 cm. longo. *Corolla* aurantiaca, tubo extra puberulo intus glabro 1·5–2 cm. longo, lobis 5, 2 posticis minoribus, antico breviter 2-fido 1 cm. longo. *Stamina* 4, in fauce tubi affixa, filamentis brevibus, antheris unilocularibus. *Ovarium* 2-loculare ; ovula in loculis 2 ; stylus glaber, stigmate tumido. *Capsula* oblongo-linearis, loculicide dehiscens, 1·5 × 0·5 cm. *Semina* 4, plano-compressa, sub-orbiculata, tuberculis et squamis adpressis laciniatis munita.

South Tropical Africa. Northern Rhodesia : Bombwe, *J. D. Martin* 219, type in Kew Herb. and Imp. For. Inst. Herb., Oxford ; "A small ant-heap shrub." Vernacular name " Kanyangomaluba " (Tok.)

Southern Rhodesia : Zambesi valley, Darwin District, *Swynnerton* 4004, " sub-shrub, growing in masses."

XXII—BOTRYOSTEGE: A NEW GENUS OF ERICACEAE.

The late O. Stapf.

This rather striking plant was discovered by Maximowicz in the year 1861 and described by him as *Tripetaleia bracteata* in 1867. It was collected by him and others in several localities on the volcanoes in the neighbourhood of Hakodate in the island of Yezo at altitudes above 2000 ft. In 1862 Maximowicz's native collector Tschonoski also found it in the northern part of Hondo, whilst still later records proved the extension of its area in that island as far south as 36° N. Lat. It frequently associates with the commoner *Tripetaleia paniculata*, whose range extends over the whole of both islands and also includes Kiusiu. Although described so long ago, it was not introduced into cultivation until 1915, after Wilson had collected it in Hondo the previous year.

The taxonomic position of *Tripetaleia* has long been uncertain. When Siebold and Zuccarini established it, they suggested, though with considerable hesitation, that it might belong to *Olacaceae*, a family very imperfectly known at the time. Subsequent authors as Lindley, Endlicher, Römer and Miquel accepted this suggestion with more or less reserve, but when Bentham and Hooker were dealing with the *Olacaceae* in their Genera Plantarum (**1**, 345 : 1862) they excluded *Tripetaleia* from this family and proposed to place it in *Ericaceae*, without, however, entering further into the question. Then in 1871 Maximowicz, in an Addendum to his "Rhododendreae Asiae orientalis," pointed out the similarity which existed between *Tripetaleia* and the rare North American genus *Elliottia* (Bot. Mag. t. 8413), which had variously been placed by successive authors near *Clethra* (Bot. Mag. t. 1057, 3743, 8970) or near *Cyrilla* (Bot. Mag. t. 2456) and *Cliftonia* (Bot. Mag. t. 1625 as *Mylocaryum*), the last two genera belonging to *Cyrillaceae*, itself a family of very dubious position. Of these Maximowicz thought *Clethra* too different to be taken into consideration as a close ally of *Tripetaleia* and *Elliottia*. He rather looked upon the latter two as a connecting link between *Rhododendreae* and *Cyrillaceae*. Very shortly afterwards (1873) Hooker, in the second volume of the Genera Plantarum, reduced *Tripetaleia* to *Elliottia* which he placed in the tribe *Rhodoreae* of *Ericaceae*, associating it with the other dialypetalous members of the family, except *Clethra*, which was treated as a *genus anomalum*. As to the *Cyrillaceae*, these were at the same time assigned a place near the *Aquifoliaceae* (*Ilicineae*) and did not any longer come into consideration as related to *Elliottia*. More recently (1889) Drude in the "Natürlichen Pflanzenfamilien" restored *Tripetaleia* as distinct from *Elliottia*, but he otherwise accepted its association with the other dialypetalous *Ericaceae*, which he grouped in an emended tribe *Ledeae*; *Clethra* becoming the type of a distinct family *Clethraceae* (see Bot. Mag. t. 8970). This arrangement left five genera in *Ledeae*, three with summer-green leaves and a very similar facies, namely *Elliottia* (1 spec.), *Tripetaleia* (2 spec.) and *Cladothamnus*

(1 spec.) and two with evergreen leaves and a very distinct appearance, *Bejaria* (16 spec.) and *Ledum* (3 spec.). It seems quite natural so far as the wider affinities come into consideration, but it breaks down with respect to the plant figured here and its relations to the original *Tripetaleia* and to *Elliottia*. The nature of these relations will become apparent from an examination of the three sections (each containing one species), which Hooker recognised when he enlarged the concept of *Elliottia*, the italicised portions at the commencement of each section being a translation of Hooker's Latin diagnoses in the Genera Plantarum **2**, 598.

Section 1 (*E. racemosa*, the species on which the genus was based) *with a short cupular* 4–5-*dentate calyx*, 4–5 *petals*, 5–10 *stamens*, *a sessile ovary and "ebracteate" pedicels*. As to this I would remark that I have found the flowers to be tetramerous in all their parts, or occasionally pentamerous in the calyx, and the ovary to be borne on a short gynophore as long as the ovary proper and as stout or even stouter, its surface apparently acting as a disc. Whether it elongates after flowering we do not know. With regard to the absence of bracts, I find that bracts as well as bracteoles occur occasionally, but they are small and generally early deciduous. The bracteoles, however small, often carry rudimentary flower-buds in their axils, suggesting a tendency towards reversion to an original more paniculate inflorescence, the normal inflorescences being typical racemes with a few occasional ramifications of a second order. As to the number of ovules, there is a considerable discrepancy in the statements of authors. Baillon (1860) speaks of *E. racemosa* as having "a great number" of ovules covering the outside of a fleshy "double" placenta. Hooker (1873) credits *Elliottia* (sensu lato) with few or many ovules* ; Drude (1889) attributed to *E. racemosa* a 4-celled 4-ovuled ovary, whilst Sargent (1902) and Britton (1908) say "ovules numerous in each cavity." My own dissections of the ovaries of field- and cultivated specimens and microtome-sections, kindly prepared for me by Dr. C. R. Metcalfe, would seem to establish the presence of about 10 shield-like ovules tightly appressed to the placenta in each cell. I am not sure, however, that they are normal, very few of them showing an embryo-sac and an indication of a micropyle. If they should be normal as to number, shape and position relative to the placenta, the question of the generic identity of *Elliottia racemosa* and *Tripetaleia paniculata* will have to be reconsidered.

Section 2 (*E. paniculata*, that is the *Tripetaleia paniculata* of Siebold and Zuccarini) *with a short cupular* 5-*lobed calyx*, 3–5 *petals*, 3–6 *stamens*, *a stipitate ovary and linear bracts*. The calyx is practically as in section 1, but with the teeth often very

*When figuring *E. racemosa* in the Botanical Magazine (t. 8413) Hooker omitted to state the number of ovules, but a section of the ovary (fig. 3) suggests a limited number, whilst a drawing, by the same author, on a sheet in the Kew Herbarium, is accompanied by the note "3–4 amphitropous ovules in each cell."

L. Snelling del. et lith.

Botryostege bracteata (Maxim.) Stapf. 1, a flowering branch, nat. size; 2, a flower in back view, ×3; 3, a stamen, ×5; 4, the gynoecium, ×5; 5, transverse section of the ovary, the ovules being omitted in two of the carpels, ×6; 6, a fruit, ×5; 7, a seed, ×24.

[*To face page* 192.

minute or quite obsolete, so that the calyx might be described as "cupular, truncate." The number of calyx teeth, if any, is generally 5, but there may be fewer owing to suppression. I can find no confirmation of Hooker's statement "petala 3–5, stamina 3–6"; their numbers seem to be constantly 3 and 6 respectively. The description of the ovary as stipitate is due to the presence of a gynophore as in section 1, but owing to its diameter being less than that of the ovary even in the flower—the body composed of gynophore (stipe) and ovary is of the shape of a short stout club—it is more conspicuous, and as it shrinks and elongates during maturation, the ripe capsule appears quite distinctly "stalked" or stipitate. The bracts and bracteoles are of the same nature as in section 1, but generally more developed and only rarely quite suppressed; both are finally deciduous.

Section 3 (*E. bracteata*, that is *Tripetaleia bracteata*) *with* 5 *linear-oblong sepals exceeding the capsule,* 3–5 *petals and* 3–5 *stamens, a sessile ovary and ample bracts.* This diagnosis is correct except in so far as I have always found the flowers trimerous from the petals onwards and as the gynophore is very short and, in the flower, as stout as the ovary, it is easily overlooked in this stage. In the mature fruit it may have become more obvious.

To resume briefly; sections 1 and 2 are, except for the numbers of parts of the flower, so much alike that they might be said to be congeneric, but the ovules, which are still very imperfectly known, seem to be peculiar, and until their exact nature is worked out, it will be better to treat the union of the two sections under *Elliottia* as provisional. Section 3, however, differs from both very markedly in the calyx, which consists of 5 perfectly distinct subfoliaceous sepals, in the comparatively large bracts which very much resemble the foliage-leaves except for their size and in the purely racemose inflorescences. It approaches more closely to *Cladothamnus* than to *Elliottia* (Sections 1 and 2). *Cladothamnus* (Bot. Mag. t. 8353) differing mainly in its strictly pentamerous flowers, which stand singly or raceme-fashion in groups of 2 or 3 at the ends of branchlets with more or less reduced foliage-leaves to support them. In the circumstances it seems to me most expedient to reduce *Tripetaleia paniculata* to *Elliottia* for the present and to treat *T. bracteata* as the type of a distinct genus most nearly allied to *Cladothamnus* and for this I propose the name *Botryostege*. The geographical distribution of these three deciduous-leaved genera of *Ledeae* is interesting: *Elliottia* in two widely distant areas, one covering practically all Japan (*E. paniculata*), the other reduced to a very few stations in Eastern Georgia and adjacent South Carolina, *Botryostege* in Yezo and the northern half of Hondo, and *Cladothamnus* in the Pacific coast ranges from Alaska to Oregon. This distribution is in accord with the numerous instances which testify to the ancient relationship of the floras of Eastern Asia and North America and it is significant that the species most isolated from the common circumpacific area

of the group, *E. racemosa*, is a typical relict species, and evidently doomed to early extinction. Nor can the remainder of the group, all sharply defined and very homogeneous species, be looked upon as being in the ascendancy. They are rather vestiges of an old aberrant type of *Ericaceae* still enjoying some vigour in Japan, which has preserved so much of its tertiary flora. There is no space left to speak here of the other two genera of *Ledeae*. They are, as already stated, not very intimately connected with the group under discussion, but they too fit into our picture of the tertiary floral connections between Eastern Asia and America, one, *Ledum*, a little diversified circum-polar group with southward radiations, the other, *Bejaria*, an essentially Andine type which has lost its linkage in the north and blossomed out into a fair number of partly dominant species.

The following is a description of the plant, together with a list of synonyms :—

Botryostege Stapf (gen. nov.) ; a *Tripetaleia* Siebold et Zucc., et etiam ab *Elliottia* Muhl., cui sub titulo sectionis subiunctum erat, calyce 5-sepalo, sepalis et bracteis subfoliaceis distinctum, potius *Cladothamno* Bong., affine, sed floribus calyce excepto 3-meris racemosis distans.

Calyx 5-sepalus, sepalis lineari-oblongis subfoliaceis maiusculis. *Petala* 3, leviter imbricata, lineari-oblonga, revoluta. *Stamina* 6, filamentis late complanatis ; antherae dorso basi affixae, loculis poro apicali in rimam decurrente dehiscentibus. *Discus hypogynus* crassus, gynophorum cingens. *Ovarium* gynophoro brevissimo insidens, 3-loculare, apice intruso ; stylus elongatus, sursum curvatus, et sub apice clavatus ; stigma basi annulatum, lobulatum. *Ovula* numerosissima. *Capsula* brevissime vel vix stipitata, globosa, 3-loba, poro apicali dehiscens, deinde tarde septicide et saepe horizontaliter disrupta, valvis tenaciter crustaceis ab axi placentifero solutis. *Semina* numerosissima, oblique oblonga, basi acuta ; testa laxe cellulosa apice in alam brevem obtusam producta ; albumen carnosum. *Embryo* minutus, cylindricus, apice 2-lobus.—*Fruticulus* subglaber, ramosissimus, gemmis perulatis. *Folia* alterna, petiolata, petiolo brevissimo, obovata, integra, hydathoda terminata. *Flores* in racemos terminales pauci- vel pluriflores dispositi ; bracteae subfoliaceae, diu persistentes ; pedicelli graciles, demum elongati, 2-bracteolati. *Capsulae* erectae.

Botryostege bracteata *Stapf* (comb. nov. e *Tripetaleia bracteata* Maxim.). Species unica.

Syn. : *Tripetaleia bracteata* Maximowicz in Bull. Acad. Pétersb. **11**, 433 vel Mél. Biol. **6**, 206 (1867) **16**, 407 vel Mél. Biol. **8**, 622 (1871) ; Franch. & Sav. Enum. Pl. Jap. **1**, 294 (1875) ; de Boissieu in Bull. Herb. Boiss. **5**, 915 (1897) ; Ono in Bot. Mag. Tokyo, **11**, 67 (1897) ; Inui, Hattori & Kuseno in Bot. Mag. Tokyo, **12**, 24 (1898) ; Schneider, Ill. Handb. Laubholzk. **2**, 467, fig. 311, g-i (1909) ;

Matsumura, Index Pl. Jap. **2**, pt. 2, 466 (1912); Komatsu in Matsumura, Ic. Pl. Koisikav. **1**, 141, t. 71 (1913); Bailey, Stand. Cycl. Hort. **6**, 3383 (1917); Nakai, Trees & Shrubs Japan, **1**, 15 (1927); Rehder, Man. Cult. Trees & Shrubs, 677 (1927).

Elliottia bracteata Hook. f. in Benth. & Hook. f., Gen. Plant. **2**, 598 (1876).

XXIII—NOTES ON AFRICAN GRASSES: XVI.*

A. P. Goossens.

Brachiaria stolonifera *Goossens*, sp. nov.; affinis *B. Marlothii* Stent, sed spiculis majoribus elliptico-lanceolatis acutis differt.

Gramen perenne, caespitosum, stoloniferum. *Culmi* usque ad 19 cm. alti, geniculati, graciles, striati, sparse pilosi, 1–2-nodes. *Foliorum vaginae* striatae, carinatae, basi dense villosae, apicem versus sparse villosae; ligulae ciliatae; laminae lineari-lanceolatae, acuminatae, apice acutae, usque ad 7 cm. longae, usque ad 5 mm. latae, planae, supra pubescentes, subtus pilosae (pilis basi bulbosis), marginibus scabridis et sparse ciliatis. *Inflorescentia* usque ad 7·15 cm. longa, paniculata, exserta, erecta; axis gracilis, triqueter, inferne laevis, superne secus angulos scaber; rami 5, solitarii, distantes, 2·5–3 cm. longi, suberecti; rhachis 2·5–3 cm. longa, gracilis, triquetra, basi dense pubescens, angulis scabridis; pedicelli brevissimi, scaberuli, apice subdiscoidei. *Spiculae* 2-florae, 3 mm. longae, densae, elliptico-lanceolatae, acutae, sericeo-pubescentes. *Glumae* membranaceae, inaequales; inferior 2·25 mm. longa, ovata, obtusa vel subacuta, 3-nervis; superior spiculam aequans, concava, 5-nervis. *Lemmata* 2, dissimillima; lemma inferius membranaceum, ♂, 3 mm. longum, glumae superiori simillimum sed dorso depressum; palea lemmati similis sed subhyalina et glabra; lemma superius subcoriaceum, ♀, 2·25 mm. longum, abrupte mucronatum; palea lemmati similis sed emucronata. *Antherae* 1·5 mm. longae, lineares.

Cape Province: Gordonia District; along the Molopo River, *Pole Evans and Pentz in Nat. Herb. Pretoria*, 8327 (type); *Goossens* 608.

Themeda triandra *Forssk.* var. **trachyspathea** *Goossens*, var. nov.; affinis var. *punctatae* Stapf, sed vaginis foliorum scabridis et apicem versus pilis e tuberculis ortis dense hirsutis differt.

Swaziland: Hlumi, on mountain slope under trees, *van Vuren in Nat. Herb. Pretoria* 10082.

Panicum coloratum *L.* var. **makarikariensis** *Goossens*, var. nov. *Gramen* glaucissimum; culmi validi, usque ad 2·25 m. alti; foliorum vaginae inferiores basi dense sericeo-pilosae.

Bechuanaland: Makarikari pan, on the Nati River, *Pentz in Nat. Herb. Pretoria* 8416; *Phillips and Goossens in Nat. Herb. Pretoria* 8787.

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*Continued from K.B. 1934, 119.

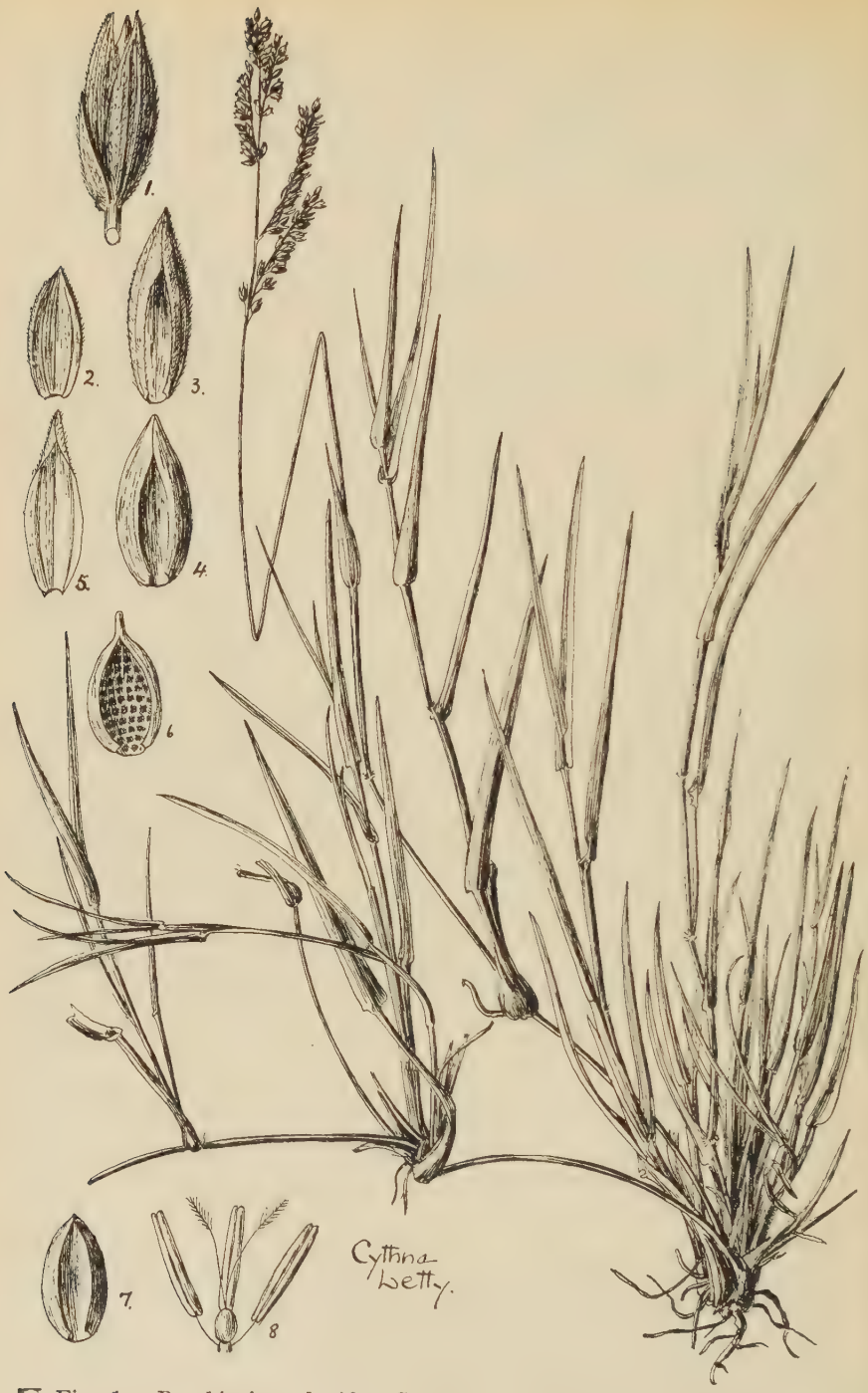

Fig. 1. *Brachiaria stolonifera* Goossens. 1, Spikelet. 2, Lower glume. 3, Lower lemma. 4, Pale of lower lemma. 5, Upper glume. 6, Upper lemma. 7, Pale. 8, Flower.

This grass is now cultivated at the Prinshof Experimental Station, and promises to become very valuable as a pasture grass. At the Makarikari pan this grass is especially sought by " Wilde Beeste."

Sporobolus Smutsii *Stent* var. **longifolius** *Goossens*, var. nov. ; a typo differt culmis majoribus, foliorum laminis plus 8 cm. longis, stolonibus validis internodiis multo longioribus 7·5–10 cm. longis.

Transvaal : Zoutpansberg District ; Messina, *Pole Evans* 2629.

Zululand : Magut, *Goossens* 609.

Sporobolus bechuanicus *Goossens*, sp. nov. ; affinis *S. indico* R. Br., sed spiculis majoribus pallidis, glumis valde inaequalibus, foliorum laminis supra scabridis differt.

Gramen perenne, caespitosum. *Culmi* usque ad 1·1 m. longi, teretes, glabri, laeves, 3–5-nodes. *Folia* plerumque basalia ; vaginae striatae, glabrae, laeves ; ligulae ciliatae ; laminae lineares, acuminatae, usque ad 20 cm. longae, 3·5 mm. latae, planae vel convolutae, graciles, striatae, glabrae, subtus laeves, supra scabridae, marginibus breviter et rigide ciliatis. *Inflorescentia* spicata, usque ad 23·3 cm. longa, 5–7 mm. lata ; rami verticillati, appressi, graciles, glabri, laeves ; ramuli solitarii, graciles, glabri, laeves. *Spiculae* uniflorae, 2·5–2·75 mm. longae, pallidae. *Glumae* valde inaequales, submembranaceae, glabrae, laeves ; inferior 1 mm. longa, ovata, apice subobtusa, enervis ; superior 2·5 mm. longa, ovata, subacuminata, apice acuta, uninervis. *Lemma* ovatum, subacutum, 2·5–2·75 mm. longum, submembranaceum, uninerve. *Palea* lemmati textura et forma similis, truncata. *Antherae* 1·25 mm. longae, lineares.

Bechuanaland Protectorate : Bushman mine, *Pentz in Nat. Herb. Pretoria* 8417 (type) ; Makarikari Lake, *Pole Evans* 3277, 3279.

Allied to *S. indicus* R. Br., from which it differs in the large pallid spikelets, the very unequal glumes and the leaves which are scabrid on the upper surface.

Monelytrum annuum *Goossens*, sp. nov. ; affinis *M. Luderitziano* Hack., sed foliorum laminis longioribus, spiculis minoribus differt.

Gramen annuum, caespitosum. *Culmi* erecti, usque ad 33 cm. longi, ramosi, 2–3-nodes, teretes, canaliculati, glabri, laeves. *Foliorum vaginae* striatae, carinatae, glabrae, laeves ; ligulae leviter membranaceae, ciliolatae ; laminae lineares, basi contractae, acuminatae, acutae, usque ad 16 cm. longae, 3–4 mm. latae, planae, laeves, glabrae, marginibus rigide ciliatis. *Panicula* angusta, cylindrica, spicata, usque ad 12·5 cm. longa. *Fasciculi* basi villosi, decidui, 4-spiculati ; spiculae 3 inferiores fertiles ; spicula summa sterilis, bracteiformis. *Spiculae* fertiles 1-florae. *Gluma* solitaria, herbacea, usque ad 5·25 mm. longa, lanceolata, basi villosa, prominenter 5-nervis (sed in spicula summa 3-nervis), acuminata, aristata, nervis et marginibus scabridis ; arista usque ad 4·25 mm. longa, scabrida. *Lemma* lanceolatum, acuminatum, usque ad 5 mm.

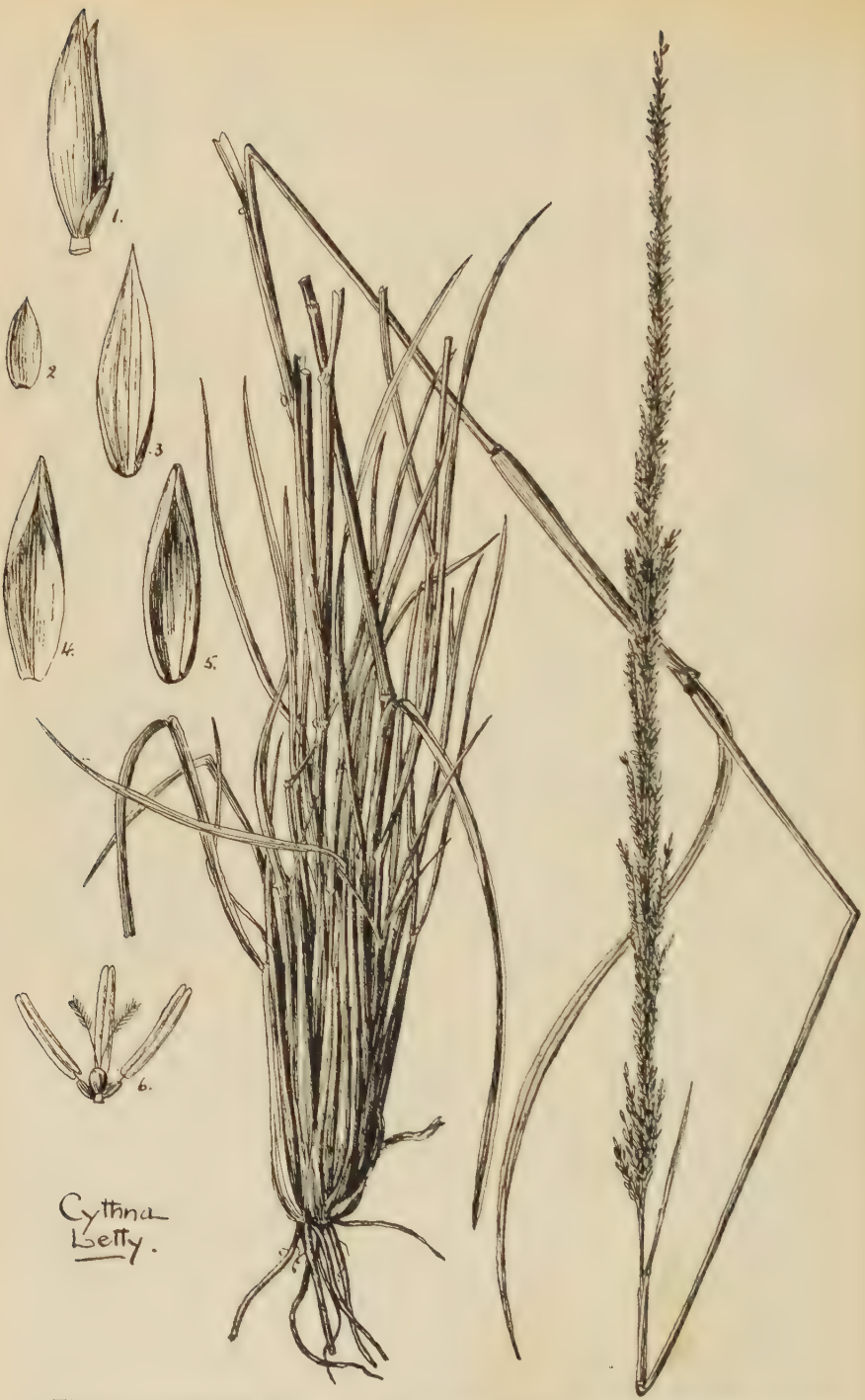

Fig. 2. *Sporobolus bechuanicus* Goossens. 1, Spikelet. 2, Lower glume. 3, Upper glume. 4, Lemma. 5, Pale. 6, Flower.

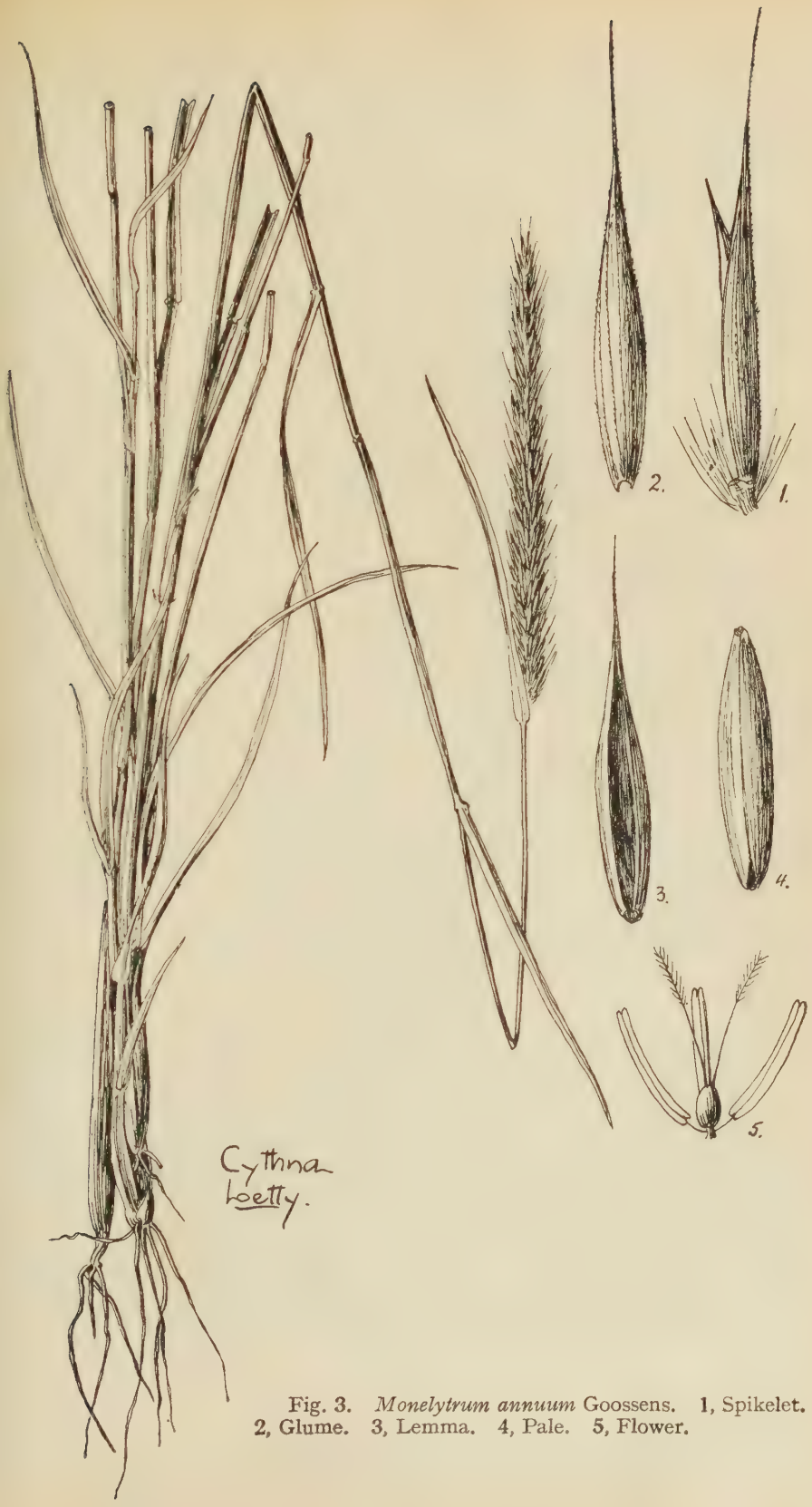

Fig. 3. *Monelytrum annuum* Goossens. 1, Spikelet. 2, Glume. 3, Lemma. 4, Pale. 5, Flower.

longum, membranaceum, sparse pilosum, 3-nerve, breviter aristatum; arista scaberula. *Paleae* submembranaceae, usque ad 3·25 mm. longae, emarginatae vel bifidae, binerves. *Lodiculae* 0. *Antherae* 1·75 mm. longae, lineares.

South West Africa: Without precise locality, *Drinkuth* 11.

The leaves are longer, and the spikelets smaller, than in *M. Luderitzianum* Hack. The plant is also an annual.

Crinipes gynoglossa *Goossens*, sp. nov.; affinis *C. abyssinicae* Hochst., sed culmis gracillimis, foliorum laminis angustissime linearibus, panicula multo minore differt.

Gramen perenne, dense caespitosum. *Culmi* usque ad 49 cm. alti, erecti, adscendentes, simplices, teretes, gracillimi, glabri, laeves, 1–2-nodes; internodium summum longe exsertum. *Foliorum laminae* usque ad 23 cm. longae, anguste lineares, basi convolutae, apice pungentes, infernes laeves, superne prominenter striatae, glabrae; ligulae ciliatae; vaginae persistentes, pubescentes, ore longe barbatae. *Panicula* usque ad 5·5 cm. longa, erecta, laxa, angusta; rhachis sinuata, glabra, subtriquetra; rami erecti, usque ad 1·25 cm. longi, singuli vel bini, 1–4-spiculati. *Spiculae* 3–4-florae, usque ad 7 mm. longae, lateraliter compressae, pedicellatae; rhachilla supra glumas et inter lemmata articulata, supra florem summum producta. *Glumae* inaequales, membranaceae; inferior brevior, oblonga, integra vel 2-lobata, 2·25 mm. longa; superior oblongo-lanceolata, 3-lobata, 3·25 mm. longa, carinata, 1-nervis, mucronata vel breviter aristulata. *Flores* hermaphroditi. *Lemmata* 3–4, e glumis exserta, oblonga, 3-lobata, 5 mm. longa, basi pilosa, 3-nervia, nervis excurrentibus, mucronata vel breviter aristulata; callus crassus, pilis longis obtectus. *Paleae* 3·5 mm. longae, anguste lineares, basi subbarbatae, apicem versus scabridae, 2-lobatae. *Stamina* 3; antherae lineares. *Ovarium* glabrum, anguste oblongum, inter stylos appendice deltoidea instructum. *Caryopsis* linearioblonga; embryo brevis; hilum basale, punctiforme.

Transvaal: Barberton District; Kaapsche Hoop, *Pole Evans* 1022.

Enneapogon spathaceus *Goossens* sp. nov.; affinis *E. molli* Lehm., sed culmis validioribus altioribus, vaginis internodiis longioribus, panicula laxiore, glumis 7-nervibus differt.

Gramen perenne. *Culmi* erecti vel geniculati vel decumbentes, usque ad 90 cm. alti, simplices vel ramosi, glabri vel nodis hirsutis. *Foliorum vaginae* internodiis longiores, molliter glanduloso-pubescentes vel tandem subglabrae; laminae lineares, usque ad 20 cm. longae, usque ad 3·5 mm. latae, plerumque convolutae, molliter glanduloso-pubescentes. *Paniculae* angustae, lineares vel lanceolatae, usque ad 14 cm. longae; rami solitarii, usque ad 2·5 cm. longi. *Spiculae* usque ad 6 mm. longae. *Glumae* subaequales, breviter glanduloso-pilosae, apice lobatae, breviter mucronatae. *Lemmata*

Fig. 4. *Crinipes gynoglossa* Goossens. 1, Spikelet. 2, Lower glume. 3, Upper glume. 4-5, Lemma. 6, Pale. 7, Lodicule. 8, Flower.

inferiora extra villosa, intus glabra ; aristae plumosae, 4–5·5 mm longae. *Paleae* 3·5 mm. longae, secus carinas glanduloso-hirsutae.

Transvaal : Zoutpansberg District ; Messina, in Botanical Reserve, *Pole Evans in Nat. Herb. Pretoria* 110083, 110084.

It comes near to *E. mollis* Lehm., but the culms are stouter, taller and sheathed all along ; the panicle is laxer ; and the glumes are 7-nerved.

XXIV—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA : XX.* T. Petch.

Entomogenous Fungi from British Guiana.

The following entomogenous fungi were collected by Mr. Paul Richards during the Oxford University Expedition to British Guiana. All the specimens were collected in one locality, Moraballi Creek, and, except where otherwise stated, in the undergrowth layers of the forest, within two or three metres from the ground.

The collection is of value in affording additional material of several of Möller's Brazilian species, and the conidial stages of several well-known *Cordyceps*. It is remarkable in containing numerous gatherings of *Ophiocordyceps unilateralis* (Tul.) Petch., a species which apparently evaded Möller and has been considered rare.

I am indebted to Sir Guy A. K. Marshall, and to Messrs. H. St. J. Donisthorpe, F. W. Edwards, O. W. Richards, and W. Tams for the determination of the insects.

Hypocrella phyllogena (*Mont.*) *Speg.*, Fung. Argent. Pug. **4**, (1881), emend Petch in Ann. Roy. Bot. Gard. Perad. **7**, 228 (1921).

On leaves of *Ochnocarpus* sp., " pale orange," August 21, 1929, *Richards* 135 ; on under side of leaves of *Aspidosperma excelsum* Benth., 90 feet from ground, September 27, 1929, *Richards* 493 ; on leaves of *Hernandia guianensis*, Arawan River, North Western District, May 1929, *Martyn* 46.

One stroma in No. 493 is the form from which von Höhnel named *Hypocrella coronata*.

H. libera *Syd.* in Ann. Myc. **14**, 85 (1916).

On leaves of small tree in undergrowth of moist Mora forest, August 21, 1929, *Richards* 155 ; on leaves of seedling *Cassia pteridophylla* in Wallaba forest, November 2, 1929, *Richards* 747.

Aschersonia Goldiana *Sacc. et Ellis* in Sacc. Syll. Fung. **14**, 990 (1890).

On dead leaf on floor of moist forest, August 21, 1929, *Richards* 142 ; on leaves of Morabukea tree, 130 feet up, October 24, 1929, *Richards* 669.

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*Continued from K.B. 1934, 126.

A. turbinata Berk. in Ann. Mag. Nat. Hist. ser 2, **9**, 199 (1852).

On peduncles of *Psychotria* sp. in undergrowth, " yellow, orange inside," September 6, 1929, *Richards* 338.

Cordyceps tuberculata (*Lebert*) *Maire* in Bull. Soc. d'Hist. Nat. de l'Afrique du Nord, **8**, 165 (1917).

On moth (Noctuid) on leaf of palm in Wallaba forest, September 20, 1929, *Richards* 405 ; on moth (*Cocytius duponchel* Poey) on bark ; at base of tree, " primrose yellow," August 26, 1929, *Richards* 236 ; on moth (Noctuid) attached to palm leaf in mixed forest, October 10, 1929, *Richards* 571.

No. 405 is perithecial ; part-spores 4–8μ long.

C. polyarthra *Möller* in Schimper, Bot. Mitteil. aus den Tropen, **9**, 213 (1901).

On a lepidopterous pupa on floor of mixed forest, " pale yellowish, smooth," September 26, 1929, *Richards* 461.

The specimen agrees with Möller's description and figures. It bears conidial and perithecial clavae, both long and filiform, the perithecial clavae so thin that they are not at first recognised as such. Möller described the colour as honey yellow (Sacc. 30, melleus). In the dried specimen the clavae are dark red-brown and horny, subtranslucent. I have another specimen from British Guiana collected by Mr. A. W. Bartlett.

Möller stated that the conidial clava divided above into a brush of separate branches, but he was unable to determine the mode of attachment of the conidia. In this specimen, the conidial clavae divide at the apex into spreading branches which ultimately separate into individual hyphae bearing clusters of phialides at the tips. The tip of the hypha is about 3μ diameter, and bears a cluster of phialides, forming a small head. The phialides are about 4 high, 2·5μ diameter, globose with conical neck, or conoid, 4×2μ. The conidia are narrow-oval, subcymbiform or curved, or cylindric, ends obtuse, 3–4×1·25–1·5μ.

From von Höhnel's description, this Isaria appears to be his *Gibellula eximia* from Brazil. It is not, however, a *Gibellula*, and it is quite different from the specimens from Java which von Höhnel distributed as *Gibellula eximia*.

C. dipterigena *B. et Br.* in Journ. Linn. Soc. **14**, 111 (1873).

On a fly (Muscidae, Calyptratae) on a fallen leaf, " fructifications buff-white," October 23, 1929, *Richards* 664 ; on a fly (Asilidae, Asilinae) attached to the leaf-stalk of a shrub in undergrowth of mixed forest, October 15, 1929, *Richards* 572.

No. 664 bears six perithecial clavae from the thorax, as figured by Möller for his *C. muscicola*. No. 572 bears two immature clavae from the thorax and a conidial clava from the tip of the abdomen, as in Ceylon specimens of *C. dipterigena*. The conidial stage is a *Hymenostilbe*, which has been described as *H. dipterigena* Petch.

C. Lloydii *Fawcett* in Ann. Mag. Nat. Hist. ser. 5, **18,** 316 (1886).

On ants (*Camponotus* sp.) on leaves of various plants in undergrowth, August 26, 1929, *Richards* 238 (in part) ; on an ant (*Camponotus* sp.) on leaf of sapling tree in undergrowth of Wallaba forest, November 7, 1929, *Richards* 774 ; on *Camponotus* sp., without number ; without data, A. W. Bartlett. These specimens are in part conidial and are those cited in the description of *Hymenostilbe Formicarum* Petch in Trans. Brit. Myc. Soc. **16,** 218 (1932).

C. bicephala *Berk.* in Hook. Journ. Bot. **8,** 278 (1856).

C. australis Speg., Fung. Argent. Pug. **4,** 80 (1881).

On an ant (*Megaponera foetens* F.) on small tree in undergrowth of rain forest, August 21, 1929, *Richards* 149 (in part) ; on an ant (*Polyrachis* sp.) on leaf in undergrowth, " red, stipe black," August 27, 1929, *Richards* 246 ; on an ant (*Megaponera foetens* F.) buried in moss on a tree trunk, near ground, in well-lit Morabukea forest, September 24, 1929, *Richards* 450 ; on ants (*Megaponera foetens* F.) among moss on rotten log in dark forest, " cap and upper part of stipe scarlet, lower part of stipe black," September 25, 1929, *Richards* 451 ; on an ant (*Megaponera foetens* F.) among moss on trunk of tree, about 4 feet from ground in mixed forest, " head scarlet, stalk dull black, except at top, which is scarlet," October 29, 1929, *Richards* 708 ; inside rotten log, Supenaam Forest Reserve, Bartica, August 1930, *Martyn* 210.

The perithecial clava is apparently readily identified when fresh by its red head and red apex of the stalk. In specimens preserved in formalin the apex of the stalk is white, and the head white or pale ochraceous. Mr. Richards states that these red-tipped forms are always found among moss on tree-trunks, the insect often being quite hidden by the moss and generally rather badly decayed.

C. bicephala is quite distinct from *C. myrmecophila* Ces. The majority of the specimens in this collection are perithecial, with straight or flexuose, simple, rhizomorphic stalks up to 8 cm. long. One clava has a short barren branch, at about one-third of its height from the head. No. 149 contains three conidial specimens, (*a*) with a short conidial clava arising from an antenna ; (*b*) an immature black clava from the thorax, and a short conidial clava from an antenna ; (*c*) a conidial clava from an antenna, another from the thorax, and a curved perithecial clava from the abdomen, which bears a conidial branch just below the head. The conidial stage was named *Isaria melanopus* by Spegazzini, and now stands as *Hymenostilbe melanopoda* (Speg.) Petch (Trans. Brit. Myc. Soc. **16,** 209 : 1932).

C. sphecocephala (*Kl.*) *Berk. et Curt.* in Journ. Linn. Soc. **10,** 376 (1869).

On a wasp (*Gymnopolybia* sp.) on leaf of Morabukea, 70 feet from ground, September 27, 1929, *Richards* 381.

Ophiocordyceps unilateralis (*Tul.*) *Petch* in Trans. Brit. Myc. Soc. **16**, 74 (1931).

Cordyceps unilateralis (Tul.) Sacc. in Michelia **1**, 320 (1878). On an ant (*Camponotus* sp.) on leaf of monocotyledon in the herbaceous layer of tropical rain-forest, August 14, 1929, *Richards* 17 ; on ants (*Meganoponera foetens* F. and *Camponotus* sp.) on leaf in dark rain forest, August 16, 1929, *Richards* 39 and 40 ; on an ant (*Camponotus* sp.) on leaf in undergrowth, August 17, 1929, *Richards* 67 ; on an ant on leaf of *Miconia* sp. August 17, 1929, *Richards* 95 ; on an ant (*Camponotus* sp.) on a small tree in undergrowth of rain forest, August 21, 1929, *Richards* 149 (in part) ; on ants (*Camponotus* sp.) on leaves of various plants in undergrowth, August 26, 1929, *Richards* 238 (in part) ; on an ant (*Camponotus* sp.) on upper surface of leaf of small shrub in swamp forest, August 27, 1929, *Richards* 247 ; on an ant (*Camponotus* sp.) on leaf in undergrowth, August 30, 1929, *Richards* 280 ; on ants (*Camponotus* sp.) on leaves of tree at 3 feet and 30 feet, September 26, 1929, *Richards* 489 ; on an ant (*Camponotus* sp.) on leaf in forest undergrowth, September 26, 1929, *Richards* 490.

Mr. Richards states that *O. unilateralis* is usually found on the under side of the leaves of shrubs and young trees. In these specimens, the number of perithecial plates on a clava varies from one to four. If the tip of a clava has been broken off, a plate may grow over the broken end and simulate a terminal hemispherical head ; or two plates may occur on opposite sides of the clava, with a similar appearance. The perithecial clavae usually arise from the head of the insect and bear conidiophores towards the apex, but independent conidial clavae may arise anywhere. As previously recorded, the conidial stage is a *Hirsutella*.

Stilbum Buquetii *Mont. et Robin* in Ch. Robin, Hist. Veg. Parasit. 640 (1853).

On a weevil (*Anchonus* sp.) on stem of climber in well-lit sandy forest, August 23, 1929, *Richards* 197.

The specimen bears only one clava, from between the abdomen and the thorax, which is immature, but its villose stalk agrees with Robin's description.

XXV—AFRICAN ORCHIDS : VI.* V. S. Summerhayes.

Habenaria (§ Ceratopetala) tentaculigera *Rchb. f.* in Flora, 1867, 101. *H. ludens* Kraenzl. in Engl. Jahrb. **51**, 394 (1914) ; Schlechter, in Engl. Jahrb. **53**, 510 (1915).

An examination of the two type collections (*Welwitsch* 716 and *Kassner* 2132) and of other gatherings from Nyasaland and southern Tanganyika Territory has shown that they all represent the same species. The really remarkable column, in which the two parts of the very much elongated anther connective lie parallel to one another,

*Continued from K.B. 1933, 254.

each bearing a loculus at the anterior end and together almost completely surrounding the orifice of the spur, is the most characteristic feature of the species. Slight variations in the spur and other parts of the perianth are such as might be expected in different individuals or populations.

Habenaria (**§ Bilabrellae**) **ndiana** *Rendle* in Journ. Linn. Soc. Lond. **30**, 393 (Feb. 1895). *H. ingrata* Rendle in Journ. Bot. 1895, 279 (Sept. 1895) ; Summerhayes in Kew Bull. 1933, 102.

On comparison of the type specimens of these two species at the British Museum it is clear that they are identical. The distinguishing features of the species are the short slender anther canals which curve upwards until they are almost parallel with the anther, and the short club-shaped stigmatic arms.

Centrostigma Schlechteri (*Kraenzl.*) *Schltr.* in Engl. Jahrb. **53**, 523 (1915). *C. nyassanum* Schltr. l.c.

An examination of all the material at Kew of the genus *Centrostigma* has convinced me that at present only two species can be recognised, perhaps only one ! Material from the Livingstone Mountains, Southern Rhodesia and the Transvaal (including the Type collections of both species cited above) belongs without doubt to one species which must bear the earlier name *C. Schlechteri* (Kraenzl.) Schltr. *C. occultans* (Rchb. f.) Schltr., known so far only from Angola, may eventually prove to be the same.

In the present state of our knowledge *C. Schlechteri* may be distinguished from *C. occultans* by the presence of a small additional horn-like outgrowth on the outer side of each stigmatic branch. This outgrowth varies in length from 0·8–4·5 mm. and usually projects straight forward. When describing his new genus (*Centrostigma*) Schlechter, although pointing out the presence and importance of the large horn arising from the inner surface of the stigma, overlooked this small additional horn, which, however, is plainly shown in Kraenzlin's drawings of *Habenaria Schlechteri* in Xenia Orchidacea, **3**, t. 286, figs. 5–9.

I cannot find the outer horn in any specimens of *C. occultans* which I have seen. In view of the variations in size of the outgrowth in flowers of *C. Schlechteri* it seems possible, however, that the presence or absence is of no value for the delimitation of species. The other characters which have been suggested as of specific value, *e.g.*, the height of the anther, the amount of division of the side lobes of the lip and the size of the flowers, do not seem to be constant or correlated with one another and in my opinion are worthless. It seems advisable, however, to keep *C. occultans* distinct from *C. Schlechteri* until more material is available especially from the intervening regions.

Hetaeria occidentalis *Summerhayes* sp. nov. ; affinis *H. Mannii* Benth., a qua sepala lateralia pro rata angustiora, petala linearia

apice non spathulata, labelli lobis lateralibus late flabellatis ex ungue angulo recto divergentibus, labello basi distincte bisaccato, rostelli lobis longioribus differt.

Herba terrestris ; caulis pauciramosus, inferne procumbens e nodis radicans, superne erectus 5–7-foliatus, internodiis usque ad 6·5 cm. longis. *Folia* basi breviter vaginantia, petiolata ; lamina oblique lanceolata vel ovato-lanceolata, apice acuminata, basi cuneata vel subrotundata, 6–16 cm. longa, 2–5·5 cm. lata, chartacea, forsan variegata ; petiolus 0·7–2 cm. longus. *Inflorescentia* terminalis, spicata, erecta, subdense multiflora, pedunculo 6–11 cm. longo bracteis 2–3 lanceolatis acuminatis instructo, spica 6–13 cm. longa circiter 1·5 cm. diametro. *Flores* suberecti, rosei et flavi ; bracteae lanceolatae, acuminatae, ovarium aequantes vel superantes. *Sepalum* intermedium lanceolatum, subacutum, 4–5 mm. longum, 1·5 mm. latum ; sepala lateralia oblique oblongo-lanceolata, acuta, 5–6·5 mm. longa, 2–2·7 mm. lata ; omnia sepala extra sparse glanduloso-pilosa. *Petala* linearia, obtusa, 4–5 mm. longa, 0·5 mm. lata *Labellum* inferne saccatum, basi sacco breviter bilobo, supra saccum valde angustatum, apice divergente bilobum, lobis late flabellatis marginibus leviter undulatis, totum labellum 5–5·5 mm. longum, lobis 3–3·75 mm. longis 2–3·2 mm. latis, sacculis 1–2 mm. longis. *Columna* crassa, apice dilatata, 1·5 mm. longa, facie appendicibus duabus triangularibus apice incurvatis instructa ; anthera columnae dorso affixa, acuta, columnam superans, 2 mm. longa ; stigmata lateralia, subhemisphaerica, rostello bilobo, lobis erectis spathulatis obtusis 1·2 mm. longis. *Ovarium* 6–11 mm. longum, subdense glanduloso-pilosum.

Gold Coast. Kibbi to Akim, Dec. 1899, *Johnson* 592. French Guinea. Faranna, Mangata, Jan. 1909, *Chevalier* 20424. Nigeria. Northern provinces : Kontagora, in a damp ravine, Jan. 1906, *Dalziel* 231. Southern provinces : Iloro, Sept. 1920, *Punch* (type) ; Oban District, 1911–2, *Talbot*.

A close relative of *H. Mannii* Benth., from which it differs by the characters given above. The very broad diverging lobes of the lip form a striking feature.

Hetaeria heterosepala *Summerhayes*, comb. nov. *Cheirostylis heterosepala* Rchb. f. Otia Bot. Hamburg. **1**, 110 (1881) ; Rolfe in Dyer, Fl. Trop. Afr. **7**, 183 (1897).

Rolfe notes that this species differs from other species of *Cheirostylis* in having the lateral sepals free. The structure of the column, however, seems quite different from that in *C. lepida* Rolfe and other species, but resembles that in the genus *Hetaeria*. In particular there are two quite well-developed longitudinal keels on the front of the column. *H. heterosepala*, however, has the flowers resupinate, a feature I have not seen in any other true *Hetaeria*.

Hetaeria tetraptera *Summerhayes*, comb. nov. *Monochilus tetrapterus* Rchb. f. Otia Bot. Hamburg. **1**, 110 (1881). *Zeuxine tetraptera*

Durand et Schinz, Consp. Fl. Afr. **5,** 57 (1892). *Z. Batesii* Rolfe in Dyer, Fl. Trop. Afr. **7,** 182 (1897).

On dissection of the type specimens I can see no significant differences between these two species. The supposed " trifid " lip of *Z. tetraptera* given in Rolfe's key is taken from Reichenbach's description in which, however, the middle lobe is said to be a minute apiculus. There is a slight protuberance corresponding to this in the lip of *Z. Batesii*. *Hetaeria tetraptera* is quite a characteristic member of the genus having a superior lip and distinct outgrowths on the front of the column.

Hetaeria Stammleri *Summerhayes*, comb. nov. *Zeuxine Stammleri* Schltr. in Engl. Jahrb. **38,** 151 (1906).

This species also seems best placed in *Hetaeria*, but here the outgrowths on the front of the column are united by their front margins to form a sort of small pouch just below the rostellum. In other features the species resembles the other African species of the genus.

The study of these species of *Zeuxine* and *Hetaeria* and also of drawings, etc., of many Asiatic species has made me feel doubtful if the two genera can be maintained separately. *Hetaeria* is generally distinguished from *Zeuxine* by the presence of outgrowths on the front of the column ; it also usually possesses non-resupinate flowers. Unfortunately there seem to be species which cannot be satisfactorily placed using the above characters. A complete revision of all the species will have to be carried out before this question can be definitely settled.

Malaxis Weberbaueriana *Summerhayes*, comb. nov. *Liparis Weberbaueriana* Kraenzl. in Orchis, **2,** 128 (1908).

An examination of the type specimen of this species shows that it is correctly placed in *Malaxis*, with which genus it agrees in habit and floral structure. The flowers are, however, resupinate, a character not frequently found in *Malaxis*.

Malaxis prorepens *Summerhayes*, comb. nov. *Microstylis prorepens* Kraenzl. in Engl. Jahrb. **17,** 48 (1893).

Malaxis Maclaudii *Summerhayes*, comb. nov. *Microstylis Maclaudii* Finet in Bull. Soc. Bot. Fr. **54,** 533, t. 11, figs. 19–28 (1907).

There is a specimen of this species at Kew collected in the southern Sudan (Lado, Yei River) by *F. Sillitoe*, No. 145.

Malaxis Chevalieri *Summerhayes*, sp. nov. *Liparis Sassandrae* A. Chev. Bot. Afr. Occ. Franç. 613 (1920), nomen. ; affinis *M. Maclaudii* (Finet) Summerhayes, a qua floribus minoribus, petalis eciliatis, labello angustiore callo singulo juxta columnam instructo facile distinguenda.

Herba terrestris ; caulis primarius repens ; caules secondarii erecti, graciles, 2·5–6 cm. alti, inferne cataphyllis vaginantibus acutis

imbricatis vestiti, prope apicem triphylli. *Folia* basi vaginantia, 7–17 mm. longe petiolata ; lamina ovata vel lanceolata, acuta, 2·5–6·5 cm. longa, 1·5–3·2 cm. lata. *Inflorescentiae* 6–10 cm. longae, pedunculo gracili vaginulis paucis lineari-lanceolatis acuminatis instructo. *Flores* in racemo brevi multifloro subcorymbose dispositi, non resupinati : bracteae lanceolatae, setaceo-acuminatae. *Sepala* oblongo-lanceolata, subacuta, 3 mm. longa, 1·3–1·4 mm. lata. *Petala* rhomboideo-lanceolata, subacuta, 2·8 mm. longa, 1 mm. lata, marginibus integris. *Labellum* quadrato-cuneatum, basi rotundatum marginibus incrassatis, apice rotundatum retuso-incisum marginibus erosis, 3 mm. longum, antice 2·8 mm. latum, basi juxta columnam callo singulo oblongo integro instructum. *Columna* 1 mm. longa ; anthera obtusa, 0·3 mm. longa ; rostellum apice truncatum leviter 3-dentatum.

Ivory Coast. Sassandra River, near Touna, under trees by river, May 1909, *Chevalier* 21786.

An inconspicuous little plant chiefly interesting for the umbellate inflorescence which, among African members of the genus, is found only in *M. Maclaudii* (Finet) Summerhayes. Whereas in Finet's species the lip bears two parallel calli at the base with in front of them a subulate projecting central tooth, in *M. Chevalieri* there is merely an entire cushion-like callus in the centre at the very base. The petals also have entire margins whereas in *M. Maclaudii* they are shortly ciliate.

Malaxis melanotoessa *Summerhayes* sp. nov. ; affinis *M. Weberbauerianae* (Kraenzl.) Summerh., a qua planta minora, labello longiore quam lato, columna dimidio breviore differt.

Herba terrestris, caule primario repente. *Caules* secondarii erecti, graciles, 3–8 cm. alti, inferne cataphyllis vaginantibus obtecti, apice 4–5-foliati. *Folia* basi vaginantia, petiolo 4–12 mm. longo ; lamina lanceolata, elliptico-lanceolata vel ovato-lanceolata, acuta, basi obliqua, uno latere rotundata, usque ad 5 cm. longa et 2·2 cm. lata, crenulata. *Inflorescentia* terminalis, erecta, gracilis, 3–6 cm. longa, laxiuscule 6–12-flora ; bracteae basi late ovatae, cordatae, apice fere setaceo-acuminatae, usque ad 4 mm. longae. *Flores* patentes, ovario pedicellato bracteam superante. *Sepala* ovato-lanceolata, subacuta, lateralia obliqua, 3 mm. longa, 1·6 mm. lata. *Petala* lanceolato-ligulata, obtusa, 2·8–3 mm. longa, 0·8 mm. lata. *Labellum* sessile, fere oblongum, basi auriculis rotundatis, apice rotundatum leviter emarginatum, in toto 3·5 mm. longum, 2·5 mm. latum, dimidio inferiore lineis duabus lateralibus latis papillato-puberulis instructum, ecallosum. *Columna* brevis, 0·8 mm. longa.

Liberia : Gola Forest, about 17 miles south of Ba, on humus of damp rocks, May 1910, *Bunting* (type in Herb. Brit. Mus.).

" Flowers pale greenish yellow. Lip dark purple at insertion and becoming creamish at length."

This rather small and not very striking species is allied to *M. Weberbaueriana* (Kraenzl.) Summerh., from which it differs in the

characters given in the diagnosis. Both species possess two broad lines of short hairs, one on each side of the median vein, in the lower part of the lip. The name is given in allusion to the dark coloured auricles (ears) at the base of the tip.

Liparis suborbicularis *Summerhayes* sp. nov. ; affinis *L. Deistelii* Schltr., a qua labello suborbiculari, callis longioribus, petalis pro rata latioribus differt.

Herba epiphytica ; pseudobulbi approximati, parvi, 1–2 cm. longi, vaginis membranaceis obtecti, radicibus flexuosis glabris instructi, superne 3–5-foliati. *Folia* elliptico-lanceolata, acuta, leviter curvata, basi vaginantia, petiolo indistincto minus 1 cm. longo ; lamina 2–11 cm. longa, 5–18 mm. lata, subchartacea, folia inferiora valde minora. *Inflorescentia* erecta, gracilis, 12–14 cm. longa, pedunculo 6–7·5 cm. longo, racemo laxe circiter 15-floro ; bracteae lanceolatae, acuminatae, 3–6 mm. longae, ovario pedicellato breviores. *Flores* patentes. *Sepalum* intermedium linearioblongum, obtusum, 7 mm. longum, 1·25 mm. latum ; sepala lateralia semiorbicularia, apice acuta, basi angustata, 4·5 mm. longa, 2·5 mm. lata. *Petala* linearia, obtusa, 7 mm. longa, 0·8 mm. lata. *Labellum* suborbiculare, apice trilobum, lobis lateralibus majoribus rotundatis, intermedio ad apiculo redacto, basi in auriculas parvas quadratas decurrens, totum labellum 4·5 mm. longum, 4 mm. latum, ante columnam callis duobus longe dentiformibus acutis instructum. *Columna* incurvata, medio utrinque ala late deltoidea instructa, 5 mm. longa.

S. Nigeria. Oban District, 1911, *Talbot* 871 (Type in Herb. Mus. Brit.).

Polystachya reflexa *Lindl.* in Bot. Reg. **27**, Misc. 18 (1841). *P. liberica* Rolfe in Kew Bull. 1908, 72. *P. Smytheana* Rolfe l.c. 71. *P. elastica* A. Chev. Expl. Bot. Afr. Occ. Franç. 616 (1920), pro parte, non Lindl.

This species was described by Lindley in 1841 from a cultivated plant from Sierra Leone and the original specimen is represented by 3 drawings (all of the flower) in Lindley's herbarium. On the same sheet is a specimen consisting of a stem bearing a leaf and flower and labelled " D[uke] of Devonshire, Oct. 1843 " ; obviously a subsequent addition. By combining the drawings and specimen as the same species Rolfe was able to draw up the description in the Flora of Tropical Africa (**7**, 127) and this was accepted by Kraenzlin in his monograph, at any rate as regards leaves and floral dimensions.

It is, however, obvious that the specimen on Lindley's sheet does not agree with the drawings and actually is *P. galeata* (Sw.) Rchb. f. On the other hand an examination of Lindley's drawings shows clearly that *P. reflexa* is the same species as was subsequently described by Rolfe as *P. liberica* and *P. Smytheana*. It therefore belongs to the section *Elasticae* and has nothing whatever to do with *P. galeata*. The lip completely reflexed in the centre with its

cushion of hairs is very characteristic of sect. *Elasticae*, as also the lack of leaves, which are absent in the other specimens of *P. reflexa*, and in the section generally are small and not developed much at the time of flowering.

Polystachya longiscapa *Summerhayes* sp. nov.; affinis *P. flexuosae* (Rolfe) Schltr., a qua planta valde robusta altiore, foliis majoribus, inflorescentia saepe ramosa, floribus multo majoribus pallide roseis facile distinguenda.

Herba perennis saxicola; caules caespitosi, pseudobulbosi, cylindrici, sursum attenuati, 10–12 cm. alti, 1–2 cm. diametro, circiter 10-foliati. *Folia* imbricata, basi vaginantia, articulata, ligulato-lanceolata, apice breviter acute bilobulata, 20–35 cm. longa, 1·5–2 cm. lata. *Scapus* erectus, 50–90 cm. altus, teres, vaginis arcte imbricatis 7–12 cm. longis apice leviter carinatis acutis vestitus, apice breviter ramosus vel simplex; racemi terminales vel ex axillis vaginarum superiorum orientes, e basi sursum floriferi, 3–9 cm. longi, dense multiflori; rhachis robusta, pubescens; bracteae patentes, acuminato-setaceae, subrigidae, usque ad 9 mm. longae, basi persistentes. *Flores* non resupinati, pallide rosei vel coeruleo-rosei. *Sepala* oblongo-ligulata, apice subacuta vel obtusa, 18–21 mm. longa, intermedio 5 mm. lato, lateralibus cum pede gynostegii mentum obtusum 5·5–6·5 mm. longum formantibus. *Petala* ligulato-oblanceolata, apice obtusa vel apiculata, circiter 19 mm. longa, supra medium 4–4·5 mm. lata. *Labellum* ex ungue brevi ovato-oblongum, basi rotundatum, apice leviter retusum, 17–18 mm. longum, prope basin 9–10 mm. latum, ecallosum. *Gynostegium* leviter curvatum, superne dilatatum, 5–6 mm. longum.

Tanganyika Territory. Morogoro District: Lupanga Peak, Uluguru Mts., along rock course of waterfall in open, below the forest, 1500 m., May 1933, *Burtt* 3496 (type); in open in rocky areas, and among rocks in forest, 1200 m., Sept. 1932, *Wallace* 178.

This plant is clearly allied to *P. flexuosa* Schltr., which is a native of Kilimanjaro, and almost a small edition of the present species. However, apart from size the two species differ in flower-colour; also in *P. flexuosa* the lip is softly hairy on the disc whereas in *P. longiscapa* it is quite glabrous.

The interesting feature in both is the relatively long scape and terminal short and dense inflorescence which in *P. longiscapa* is branched. *P. flexuosa* is placed by Kraenzlin in the section *Dendrobianthe* but this is clearly not its correct position. In the inflorescence both species, and particularly *P. longiscapa*, approach the remarkable monotypic genus *Neobenthamia*, which, after being originally sent home by Kirk so long ago as 1884, was collected by Mr. G. B. Wallace in the same district as our new species.

Diaphananthe Burttii *Summerhayes* sp. nov.; affinis *D. Mildbraedii* Schltr., sed foliis multo majoribus, petalis et labello latioribus, labello ecristato, rostello latiore tridentato differt.

Herba epiphytica ; caulis brevis, usque ad 5 cm. longus, 3–4-foliatus, vaginis foliorum omnino obtectus. *Folia* e basi vaginantia articulata, lineari-oblanceolata, apice valde inaequaliter breviter acute vel subacute bilobulata, lobulo breviore subnullo, 10–16 cm. longa, supra medium 1·5–2 cm. lata, coriacea, vaginis striatis. *Racemi* dependentes, graciles, sublaxe 6–10-flori, 6–9 cm. longi ; bracteae amplexicaules, oblique cupulares, obtusae, 1–3 mm. longae. *Flores* albi, erecti, ovario pedicellato 7–11 mm. longo. *Sepala* elliptico-oblonga, obtusa ; intermedium 4·5 mm. longum, 1·8–2·8 mm. latum ; lateralia 5 mm. longa, 1·5 mm. lata. *Petala* elliptico-orbicularia, apice obtusa vel rotundata, 5–5·5 mm. longa, 4–5 mm. lata. *Labellum* ex ungue brevissimo ambitu transverse ellipticum, obscure quadrilobum, lobulis lateralibus quam intermediis majoribus omnibus rotundatis marginibus irregulariter crenatis undulatis, totum labellum 5–5·5 mm. longum, 7·5–9 mm. latum ; calcar leviter incurvatum vel rectum, dimidio apicale modice inflatum, 1 cm. longum. *Columna* 2·5 mm. alta, dorso convexa, facie concava, pede brevissimo vel nullo ; clinandrium fere orbiculare, leviter excavatum ; anthera leviter cucullata, antice leviter retusa ; pollinia subglobosa, stipitibus 2 distinctis gracilibus viscidiis 2 liberis semiellipticis vel fere lunatis ; rostellum latum apice tridentatum ; stigma basi valde excavatum et quasi saccatum, sacci marginibus inferioribus prominentibus callum obtuse tridentatum formantibus.

Belgian Congo. Virunga Mts., Namlagira Volcano, east slope, in moist forest 15 ft. from ground, not common, 6500 ft., Jan. 1931, *Burtt* 3138 (type).

I find it extremely difficult to place this puzzling plant satisfactorily. It is similar to *Diaphananthe Mildbraedii* Schltr. in general features and possesses the short stem characteristic of this group of *Diaphananthe* as well as the separate viscidia found in *D. Mildbraedii* and *D. kamerunensis* Schltr. On the other hand it lacks any tooth or outgrowth on the lip, the rostellum is shortly three-lobed and the lip broader than long, all characters of *Rhipidoglossum*. The column also seems to possess a very short foot, another character of the last-named genus. The most remarkable feature, however, is the sac-like depression in the column at the base of the stigma. The lower edges or wall of this depression are elevated above the outside portion of the column to form a sort of circular callus with 3 obtuse points projecting beyond the rest and jutting out slightly over the mouth of the lip-spur which is just below. This feature is developed to a much less extent in *D. Mildbraedii*.

I include this plant for the time in the genus *Diaphananthe* on account of the general vegetative characters, but it is possible that it is better placed in *Rhipidoglossum*. Much further work is required on the Angraecoid orchids before a really final classification can be reached and certainly the relationship of these two genera to one another requires careful examination. It is possible that *D.*

Burttii will have to be made the type of a new genus when more data are available.

Aerangis (§ Rangaeris) brachyceras *Summerhayes*, sp. nov. ; inter species generis caule elongato usque 20 cm. longo, foliis linearioblongis suberectis, inflorescentiis suberectis subdense multifloris, floribus parvis suaveolentibus, calcari leviter incurvato 5–6 mm. longo, viscidiis duobus distinctibus cohaerentibus facile distinguenda.

Herba epiphytica vel saxicola. *Caulis* erectus, usque ad 20 cm. altus, inferne radicibus numerosis flexuosis breviter denseque pilosis instructus, superne foliorum vaginis imbricatis striatis omnino obtectus. *Folia* suberecta vel erecto-patentia, stricta vel rarius leviter curvata, basi articulata vaginantia, lineari-oblonga, apice inaequaliter obtuse biloba, 8–13 cm. longa, 7–13 mm. lata. *Racemi* multi ex axillis foliorum inferiorum orti, suberecti, 4–13 cm. longi, basi cataphyllis 2–3 vaginantibus instructi, subdense 7–15-flori ; bracteae patulae, late lanceolatae, acutae vel acuminatae, 2·5–5 mm. longae. *Flores* pro genere parvi, pallide flavi, adscendentes. *Sepalum* intermedium oblongo-lanceolatum, acutum, 5·5–7 mm. longum, 1·5–2 mm. latum ; sepala lateralia lineari-oblonga vel lineari-oblanceolata, acuta, 6–7·5 mm. longa, 1·2–1·5 mm. lata. *Petala* oblonga vel elliptico-oblonga, obtusa vel rotundata, 5–5·5 mm. longa, 1·4–2 mm. lata, sepalis breviora. *Labellum* late lanceolatum vel oblongo-lanceolatum, acutum vel breviter acuminatum, 5·5 mm. longum, medio circiter 3 mm. latum ; calcar cylindricum, dimidio apicali leviter inflatum, leviter incurvatum, 5–6 mm. longum. *Columna* leviter incurvata, 2 mm. longa ; anthera fere hemisphaerica, antice truncata ; pollinia 2 subglobosa, stipitibus 2 distinctis linearibus 0·75 mm. longis, viscidiis 2 subquadratis connatis ; rostellum breviter productum, obtusum, utrinque lobulo parvo instructum ; stigma excavatum, labio inferiore prominente.

Belgian Congo. Virunga Mts., E. of Mt. Namlagira, on 1905 Kanamaharargi Lavas, on lichen and moss covered lava boulders, very common, sweet scented, Jan. 1931, *Burtt* 3123 (type). Uganda. Mt. Elgon, Bankoko and Bulago, on trees and rocks in forest, 6–7000 ft., June 1924, *Snowden* 900. Butandiga, on rocky knoll, 7000 ft., Jan. 1918, *Dummer* 3686 (fruiting specimen).

Aerangis brachyceras is outstanding in the genus on account of the elongated stem which may sometimes reach a total length of over 20 cm. although many plants have relatively short ones. The species falls into sect. *Rangaeris* characterised by the presence of two separate stipes to the pollinia. In most species of the section there is a common gland to both stipes but in *A. filipes* Schltr. two glands are present. *A. brachyceras* seems to be intermediate in that the two glands, although distinctly visible, are adherent along their adjacent edges. The almost upright inflorescences with their rather closely placed small flowers is also a striking feature of the species in a genus where pendulous or at least widely spreading inflorescences are usual.

In view of the known distribution it is probable that the species will be found on other East African mountains, such, for instance, as Ruwenzori and Kenya.

Aerangis (§ Euaerangis) calodictyon *Summerhayes*, sp. nov. ; affinis *A. rhodostictae* Schltr., a qua foliis brevioribus latioribusque, floribus albis, labello apice rotundato facile distinguenda.

Herba epiphytica, radicibus numerosis flexuosis glabris, caule brevissimo 2–4-foliato. *Folio* elliptico-oblanceolata vel lineari-oblanceolata, apice inaequaliter acute bilobata, sinu acuto, 5–8 cm. longa, 1·5–2·5 cm. lata, pulchre retinervia, tenuiter coriacea, subtranslucentia. *Inflorescentiae* subpatentes, 9–13 cm. longae, dimidio superiore 5–7-florae ; bracteae lanceolato-triangulares, acutae, 3–5 mm. longae. *Flores* albi, 3–4 cm. diametro, ovario pedicellato circiter 1·5 cm. longo. *Sepalum* intermedium oblongo-ellipticum, apiculatum, 1·6–1·8 cm. longum, 6–7 mm. latum ; sepala lateralia similia, aequilonga, 5–6 mm. lata. *Petala* elliptica, basi angustata, apice acutata, apiculata, 1·6 cm. longa, 7–8 mm. lata. *Labellum* e basi cuneata suborbiculari-flabellata, rotundata, margine ± crispata, 1·8–2 cm. longa, 1·5 cm. lata ; calcar filiforme, 7 mm. supra basin valde incurvatum, prope apicem leviter inflatum, 3–4 cm. longum. *Columna* 4 mm. alta, infra antheram valde dilatata ; androclinium rotundatum, dorso leviter retusum ; anthera semiglobosa ; pollinia ellipsoidea, pallide flava, stipite singulo, superne dilatato inferne filiformi, viscidio elliptico ; rostellum elongatum, obtusum.

Tanganyika Territory. 60 miles inland from Dar es Salaam, epiphytic on liane, communicated by Mr. R. H. Pullen-Burry, flowered in Royal Botanic Gardens, Kew.

A handsome member of the genus allied to *A. rhodosticta* Schltr. and characterised by the broadly cuneate rounded not acute lip. The flowers are quite white except the spur which is faintly reddish on the distal part. The rather thin somewhat translucent leaves are green with a network of darker veins, giving a pleasing effect.

XXVI—FIRMIANA AND ERYTHROPSIS. H. N. Ridley.

The two genera of *Sterculiaceae*, *Firmiana* Mars. and *Erythropsis* Lindl., together with *Scaphium*, *Pterygota*, *Pterocymbium*, etc., though separated by R. Brown from *Sterculia* (Bennett, Pl. Jav. Rar. 235), were reunited with it by Bentham and Hooker in the Genera Plantarum, and by Masters in Fl. Brit. Ind. Most of the above genera have been separated by later botanists, but *Firmiana* and *Erythropsis*, though very distinct, are still constantly confused.

The genus **Firmiana** was proposed by Marsigli (Saggi Padov. **1,** 106 : 1786) for *Sterculia platanifolia* Linn. fil. (Suppl. 423), a native of China and Japan. To the same genus belong **F. maior** *Hand.-Mazz.* (Anz. Akad. Wiss. Wien 1923, **60,** 96 : 1924), of Yunnan, **F. diversifolia** *A. Gray* (U.S. Explor. Exped. Bot. **1,** 185, t. 13 : 1854), of Fiji, and **F. papuana** *Mildbraed* (in Engl. Jahrb. **62,** 365 : 1929), of Papua.

F. platanifolia (*Linn. f.*) *Mars.* has been renamed *F. simplex* by W. F. Wight, who has identified it, as did De Candolle (Prodr. **1**, 483) with *Hibiscus simplex* Linn. (Sp. Pl. ed. 2, 977). Linné's description is as follows: "Planta *mihi triennis*, Caule *indiviso, recto, crassiusculo.* Folia *integerrima, cordata, triloba, obtusiuscula, glabra, margine inaequali, nervis subtus poro mellifero.* Flores *non vidi. Habitat in* Asia." He compares it with a figure in Sloane's "History of Jamaica" which clearly represents *Hibiscus elatus.* Linné saw no flowers of his plant and no type exists. His description, as far as it goes, is quite unsuited to the *Firmiana*, a big, branched tree with leaves usually not cordate, pubescent beneath, with acute points to the lobes, and no honey gland on the nerve bases. Whatever the plant was, it could not be *Firmiana.*

Firmiana Merrittii *Merrill* in Phil. Journ. Sci. Bot. **9**, 314 (1914) from Mindoro (*Merritt* 8555) is probably a true *Firmiana.* Only fallen leaves and fruits are known. The leaves somewhat resemble those of *F. diversifolia*, but, unlike any other species in the genus, are rounded and entire. The fruit resembles that of the above-mentioned species.

Firmiana borneensis Merrill (in Univ. Calif. Publ. Bot. **15**, 192 : 1929) is **Scaphium affine** (*Masters*) *Pierre*, Fl. For. Cochinch., fasc. 13, sub. t. 193–95 (1889).

All the remaining species commonly referred to this genus by authors belong to the genus **Erythropsis** *Lindl.*, which is distinguished by the long cylindric or funnel-shaped sepaline tube with very short teeth, the ovary tapering gradually to the 5 recurved stigmas, and the one-seeded carpels. In **Firmiana** *Mars.* the flowers are very small with a short campanulate tube and longer narrow reflexed sepaline lobes, the style is distinct from the ovary, the stigmas capitate, and the carpels often two-seeded.

The following species belong to the genus **Erythropsis** *Lindl.* :

E. colorata (*Roxb.*) *Burkill* in Gard. Bull. Straits Settlements, **5**, 231 (1931). *E. Roxburghiana* Schott. *Sterculia colorata* Roxb. Cor. Pl. **1**, 26, t. 25 (1795).

India, Burma, Andamans, Ceylon, Siam, Cambodia.

var. **bracteata** (*Aug. DC.*) *Ridley*, comb. nov. *Firmiana bracteata* Aug. DC. in Bull. Herb. Boiss. sér. 2, **3**, 369 (1903).

Cambodia. This appears to be merely an abnormal form with long bracts.

E. fulgens (*Mast.*) *Ridley*, Fl. Mal. Penins. **1**, 277 (1922). *Sterculia fulgens* Wall. Cat. 1135, nomen ; Mast. in Hook. fil. Fl. Brit. Ind. **1**, 360 (1874).

Burma, Siam, Penang, Perak, Sumatra.

E. pallens *Ridley*, sp. nov. *Sterculia pallens* Wall. ex Voigt, Hort. Suburb. Calc. 105 (1845), nomen ; Hochreutiner in Bull.

Inst. Buitenzorg, **19,** 22, (1904), nomen ; King in Journ. As. Soc. Beng. **62,** 73 (1891). Species ab *E. fulgente* (Mast.) Ridley, cui affinis, foliis subtus dense velutinis, lobis acutis, panicula dense velutina, calyce campanulato multo breviore dense velutino flavo, lobis longioribus latioribus distincta.

Arbor. Folia ambitu ovata vel rotundata, late triloba vel sub-5-loba, lobis subacutis, basi cordata, 13–27 cm. longa, 15–32 cm. lata, coriacea, supra parce pilosa, subtus pilis stellatis dense pallide velutina ; costa et nervi primarii crassi, subtus elevati, reticulationibus latis ; petioli validi, dense pilosi, 11–22 cm. longi. *Paniculae* complures, axillares, dense velutinae, 9–20 cm. longae, ramis 1–3 cm. longis, pedicellis 3–5 mm. longis. *Calyx* campanulatus, velutinus, flavus, 1·5–2 cm. longus, lobis 5 triangulari-lanceolatis acutis 4 mm. longis 2 mm. latis extra velutinis intus glabris. *Flores masculi* : androecium stipite gracili glabro praeditum, antheris 15 in capitulo globoso 2 mm. lato. *Flores feminei* masculis saepe commixti : gynophorum crassum, 1·5 cm. longum ; carpella 5, conica, stigmatibus brevibus recurvis ; antherae abortivae in serie unica basali dispositae. *Folliculae* papyraceae, glabrae, oblongo-lanceolatae, obtusae, reticulato-nervosae, 6 cm. longae, 2·5 cm. latae, stipitibus circiter 5 mm. longis, gynophoro lignoso 1·5 cm. longo. *Semen* singulum, ellipsoideum, 1 cm. longum, siccitate brunneum, rugosum.

N. W. India. Without locality, *Royle.* Garhwal, *Falconer* 289 (type). Kumaon, *Thomson* ; above Kota, 2500 feet, *Strachey & Winterbottom* 2. Dehra Dun, below Mussoorie, 3000 ft., *P. W. Mackinnon.* United Provinces : Rajpur-Soheria Forests, Champaran, *Haines* 1967, 1968 ; above Rajpur, dry aspects, *Haines* 2162 ; Mohand, Siwaliks, *Haines* 2531.

Bengal. Udali, Chenga Hill, Darjeeling, *Gamble* 1623A.

Madras. Gadikota, *Gamble* 10,833 ; Horsleykonda, *Gamble* 15,134.

Wallich's *Sterculia pallens* was based on a plant supposed to come from Nepal, cultivated in the Botanic Gardens, Calcutta, of which he never saw the flowers. It was confused by Masters and other botanists with *S. fulgens* Wall. (*Erythropsis fulgens* Ridley), a native of Penang. In this as in *E. colorata* (Roxb.) Lindl. the stellate hairs on flowers and leaves are extremely short, giving a scurfy appearance. In *E. pallens* Ridley they are long and form a whitish velvety covering to the flowers, shoots and underside of the leaves. No one seems to have recorded the colour of the flowers but they appear to be bright yellow.

E. Barteri (*Mast.*) *Ridley,* comb. nov. *Sterculia Barteri* Mast. in Oliv. Fl. Trop. Afr. **1,** 218 (1868) ; et in Hook. Ic. Pl. t. 2277 (1894).

Tropical Africa.

E. Migeodii (*Exell*) *Ridley,* comb. nov. *Firmiana Migeodii* Exell in Journ. Bot. **68,** 83 (1930).

East Africa.

E. erythrosiphon (*Baill.*) *Ridley*, comb. nov. *Sterculia erythrosiphon* Baill. in Bull. Soc. Linn. Par. **1**, 486 (1885).

Madagascar.

The African species have the long sepaline tube with short teeth of *Erythropsis*, and like the other species are leafless when in flower, but the flowers are much smaller and more slender and usually in lax panicles. They might form a section of the genus.

XXVII—GENERIC NAMES PUBLISHED IN ZINN'S CATALOGUS. T. A. Sprague.

The starting-point for the recognized nomenclature of Phanerogams, fixed by the second International Botanical Congress held at Vienna in 1905, is the publication of Linnaeus, Species Plantarum ed. 1 (1753). The binary system of nomenclature for species inaugurated by Linnaeus in that work was not immediately accepted by certain of his contemporaries, who continued using "phrase-names" for species. Among these authors were Philip Miller (Gard. Dict. Abridg. 1754; Gard. Dict. ed. 7, 1759), John Hill (Brit. Herbal, 1756; Fl. Brit. 1760), Patrick Browne (Hist. Jam. 1756), Zinn (Catal. Pl. Gotting. 1757), Fabricius (Enum. Pl. Hort. Helmst. 1759, 1763), Boehmer (Ludwig. Def. Gen. Pl. ed. 3, 1760), Scopoli (Fl. Carniol. 1760), Adanson (Fam. Pl. 1763), and Haller (Hist. Stirp. Helv. 1768). The generic names published by these authors were rejected by C. E. Moss (Cambridge British Flora, **2**, p. xii: 1914), and A. J. Wilmott (Babington, Man. Brit. Bot. ed. 10, p. ix: 1922), on the ground that international botanical nomenclature was a development of the binary nomenclatural system instituted by Linnaeus, and that generic names published by authors who did not adopt that system should consequently be ignored. The contrary view was taken by most botanists, including Briquet, Schinz, Harms and Fernald. At the fifth International Botanical Congress, held at Cambridge in 1930, a new article was proposed dealing with this question: "Art. 19 bis . . . Names are legitimate only when they are a development of the system of nomenclature introduced by Linneaus in 1753 (Species Plantarum), which established consistent binary nomenclature for species" (International Botanical Congress, Cambridge, 1930. Nomenclature. Proposals by British Botanists, 201: 1929; Briquet, Rec. Syn. Doc. Vme Congr. Internat. Bot. Cambridge 1930, 12; Briquet, Avis Préal. 8: 1930). On a ballot being taken, it was rejected by 239 votes to 158, the decision of the Vienna Congress* being thereby confirmed (Rep. Bot. Congr. Cambridge, 1930, 567–570: 1931). The question may accordingly be regarded as closed.

*Art. B 17 ter, J 17 ter and others (Texte Syn. Doc. Congr. Vienne, 1905, 33, 35) were rejected in favour of Art I 17 ter (Internat. Rules, ed. 2, Art. 20), which was adopted by 133 votes to 36 (Act. Congr. Bot. Vienne, 1905, 98–102).

The recent acquisition by the Kew Library of a copy of Zinn's Catalogus afforded an opportunity for listing the new generic names published in it. There are 24 of these, all but four, however, being taxonomic or nomenclatural synonyms, later homonyms, or nomina rejicienda. The generic names **Faba** (*Leguminosae*), **Odontites** (*Scrophulariaceae*), and **Rhagadiolus** (*Compositae*) must now be attributed to Zinn (1757) instead of to later authors. This will cause no practical inconvenience. The only nomenclatural change necessitated is the replacement of *Helminthia* Juss. (1789) by **Helminthotheca** *Zinn.* (1757). As the genus is a small one frequently included in *Picris* L. (1753), and the two names *Helminthia* and *Helminthotheca* are very similar, it seems hardly worth while conserving the former.

The generic name *Mariscus* Zinn. (1757) has been taken up by Fernald and other botanists in place of *Cladium* P. Br. (1756) on the ground that the latter name was published without a generic description. In the writer's opinion Patrick Browne supplied a generic as well as a specific description of his *Cladium culmo nodoso, floribus quasi umbellatus, umbellis gradatim assurgentibus.* But even if the description given by Patrick Browne is regarded as a combined generic and specific one, *Cladium* P. Br. (1756) was still validly published, since it was the name of a *monotypic new genus based on a new species* (Briquet, Rec. Syn. 44, Art. 38 ter ; Briquet, Avis Préal. 13, Art. 38 ter ; Rep. Internat. Bot. Congr. Cambridge, 1930, 595). Hence **Cladium** *P. Br.* must be maintained under International Rules.

List of the New Generic Names.

Alectorophus Zinn, 288 (*Rhinanthus Crista-galli*) : **Rhinanthus** *L.* (1753).

Asterocephalus Zinn, 381 (*Scabiosa columbaria*) : **Scabiosa** *L.* (1753), partim.

*Coronopus** Zinn, 325 (*Cochlearia Coronopus*) ; Boehm. in Ludw. Def. Gen. Pl. ed. 3, 226 (1760) ; Gaertn. Fruct. **2,** 293 (1791) ; nomen illegitimum (non Mill. 1754) : *Carara* Medik. (1792) : *Senebiera* DC. (1799).

Dictamnus Zinn, 316 (*Origanum Dictamnus*), nomen illegitimum (non L. 1753) : **Amaracus** *Gled.* (1764).

Epipactis Zinn, 85 (*Serapias Helleborine, Ophrys ovata, O. Nidus-avis*), nomen illegitimum : **Serapias** *L.* + **Ophrys** *L.*

Faba *Zinn,* 357 (*Vicia Faba*) ; Boehm. in Ludw. Def. Gen. Pl. ed. 3, 257 (1760) ; Adans. Fam. Pl. **2,** 331 (1763).—Validated by reference to Tourn. Inst. **1,** 391, t. 212 (1719).

Helenia Zinn, 417 (*Helenium autumnale*) : **Helenium** *L.* (1753).

Helminthotheca *Zinn,* 430 (*Picris Echioides*) : *Helminthia* Juss. (1789).—The name *Helminthotheca* Zinn was validated by reference

*The question whether *Coronopus* Zinn should be conserved is at present *sub judice.*

to the generic description previously given in Haller, Enum. Pl. Gotting. 413 (1753).

Intybus Zinn, 429 (*Hieracium sabaudum, H. umbellatum*) : **Hieracium** *L.* (1753), partim.

Lappa Zinn, 386 (*Arctium Lappa*) : **Arctium** *L.* (1753).

Lerchia Zinn, 30 (*Chenopodium fruticosum, Ch. altissimum*) : **Suaeda** *Forsk.* (1775), nomen conservandum.

Libanotis Zinn, 226 (*Athamanta Libanotis*) : **Seseli** *L.* (1753).

Limnopeuce Zinn, 55 (*Hippuris vulgaris*) : **Hippuris** *L.* (1753).

Mariscus Zinn, 79 (*Schoenus Mariscus*) : **Cladium** *P. Br.* (1756).

Nasturtium Zinn, 326 (*Thlaspi arvense, Th. saxatile, Th. perfoliatum, Th. hirtum, Th. campestre, Th. montanum, Th. Bursa-pastoris, Lepidium sativum, L. ruderale, L. virginicum*), nomen illegitimum (non Mill. 1754) : **Thlaspi** *L.* (1753).

Odontites *Zinn*, 289 (*Euphrasia Odontites*) ; Boehm. in Ludw. Def. Gen. Pl. ed. 3, 126 (1760) ; Haller, Hist. Stirp. Helv. **1**, 134 (1768) ; Moench, Meth. 439 (1794).—Validated by reference to the generic description previously given in Haller, Enum. Stirp. Helv. 627 (1742).

Pyrethrum Zinn, 414 (*Chrysanthemum frutescens, Ch. corymbosum*) : **Chrysanthemum** *L.* (1753), partim.

Rhagadiolus *Zinn*, 436 (*Hyoseris Rhagadioloides, H. Hedypnois* ? *Lapsana Zacintha*) ; Scop. Introd. 122 (1777).—Validated by a description.

Squamaria Zinn, 277 (*Lathraea Squamaria*) : **Lathraea** *L.* (1753).

Stellaria Zinn, 55 (*Callitriche palustris*) : **Callitriche** *L.* (1753).

Taraxacum Zinn, 425 (*Leontodon Taraxacum, L. hispidus, Crepis rubra, C. alpina*) : *Leontodon L.* (1753).

Tetralix Zinn, 202 (*Erica herbacea*) : **Erica** *L.* (1753), pro parte maxima.

Unifolium Zinn, 104 (*Convallaria bifolia*) : **Maianthemum** *Web.* (1780), nomen conservandum.

Viscago Zinn, 188 (*Cucubalus baccifer, C. Behen, C. tataricus, C. Otites, C. reflexus, Silene lusitanica, S. quinquevulnera, S. nocturna, S. nutans, S. amoena, S. fruticosa, S. gigantea, S. conoidea, S. conica, S. Behen, S. pendula, S. rubella, S. cretica, S. Armeria*), nomen illegitimum : **Cucubalus** *L.* (1753) + **Silene** *L.* (1753).

XXVIII—MISCELLANEOUS NOTES.

Poorman or Kawau Orange of New Zealand.—A note on this interesting Citrus fruit has recently been received from Mr. N. R. W. Thomas, Chairman of the Auckland Citrus Committee of the New Zealand Institute of Horticulture. The New Zealand summer does not appear to be hot enough to bring the ordinary grape fruit of commerce (*Citrus Paradisi* Dacf. forma ; *C. decumana* Murr. var. " grape-fruit ") to perfection, and the orange under consideration—

classed as a "pomelo" or "grape-fruit"—would seem to be regarded as a satisfactory substitute and better adapted to the climate. Mr. Thomas states that "the New Zealand Poorman may be described as a flattened fruit up to 4 inches in diameter, with a distinct odour, orange-coloured flesh, plenty of juice with just the necessary tang of bitterness to give it a flavour of its own, generally few seeds, thin rind, and curing well. The result to date is that your Committee is unanimous in recommending that only what it calls the Morrison's Seedless Strain of Poorman should be grown. For this fruit the name 'Kawau Orange' has been appropriated. This seedless strain gives large fruit with all the best qualities of the Poorman for juice content, flavour, odour and curing. It is generally, if not entirely, free from seeds and, in short, makes an excellent fruit for breakfast, dessert or preserving. . . ."

The history of the introduction of this fruit to New Zealand begins at the time when Sir George Grey was Governor. About 1855 he was living in Kawau Island where, in his garden, he established plants—including this Citrus—from all parts of the world. Prior to this period, nothing definite seems to be known of its history.

"From Kawau the first budwood for propagation of the Poorman's Orange, as it was described by Sir George Grey on account of its heavy bearing qualities, was given to Mr. Edward Morrison, N.D.H. (N.Z.) who was present and remembers the visit quite well. Some of the progeny of these buds are still in possession of the family, but subsequently other buds were given to the late Mr. David Hay, who shared them with Mr. C. T. Wren. As a result of the propagation in their three nurseries, Poorman oranges were extensively planted round Auckland and in many places further north."

"Various strains having from none to many seeds" appear to have been developed and an "investigation by Mr. Green has involved the sampling of many plantings including some of those in New South Wales where it would seem that the earlier and poorer strains of the N.Z. Poorman arrived." It is sometimes referred to as a "bitter orange."

At the present time, in reference to plantings, Mr. Thomas states that "The survey has shown that there are considerable groves, up to 400 trees, of the Kawau Orange, or Morrison's Seedless strain, planted in various localities, though unfortunately the other strains would seem to predominate. It is estimated that there are at least 8000 bearing trees of the New Zealand Poorman planted in New Zealand, to say nothing of the large plantings made in the last few years that will soon be coming into production."

It is recommended that with proper marketing arrangements, New Zealand should be able to supply all the breakfast and marmalade oranges she can absorb, and that the Kawau orange should not be used in its immature state "as it seems to be quite clear that the longer the fruit can be allowed to hang on the tree the greater and better is its juice content."

It may be of interest to mention that in a note on " The Early History of Citrus Importations," in the New Zealand Journal of Agriculture, 1929, p. 21, the author, Mr. G. A. Green, N.D.H., refers to the difficulty in 1881 of selling the poorman orange—grown by Mr. H. Dobbie with other Citrus fruits in a grove at Whangarei—owing to overseas competition. In the same article Mr. Green states " The Poorman Industry has also established itself and the fruit is now recognised as of outstanding value for marmalade and a most useful breakfast fruit. It promises to be an industry of great economic value." J. H. HOLLAND.

Wild Flower Schedules.—The Wild Plant Conservation Board has recently issued a number of schedules of wild flowers which require particular protection in different counties. Nearly thirty lists have been drawn up and are intended for the guidance of the local authorities concerned with the administration of the bye-law forbidding the uprooting of wild plants. With the object of avoiding lists of unwieldly length, some rare species (most of which are inconspicuous and therefore chiefly of botanical interest only) have been omitted. The English and Latin names of each species are given, and the lists should prove of great value, not only in dealing justly with offenders when caught, but also in drawing the attention of local authorities to the need for protecting plants which, though comparatively common in their own neighbourhood, may be rare in Britain as a whole (e.g., fritillaries, grape-hyacinths, etc.).

The Koenig Collection in the Lund Herbarium.—Inadvertently two of the sheets borrowed from the Lund Herbarium were omitted from the Catalogue published in K.B. 1932, 49–76. Indeed, one of them appeared in the list (No. 20) of " species mentioned in Retz. Obs. but not found in the Collection " (p. 76). These two sheets are :—

RUTACEAE.

Glycosmis mauritiana (Lam.) Tanaka, det. T. Tanaka.

The sheet is stamped with the Museum Acharianum stamp and is inscribed on the front in ink " Coromandelia " under the specimen and in the right hand bottom corner, " L. pentaphylla." Presumably this is the specimen referred to under *Limonia pentaphylla* Retz. Obs. **5**, 24.

CYPERACEAE.

Cyperus Luzulae Retz.

Inscribed in ink at the foot on the back :—

" Cyperus Luzulae Rottb. ic. Hellw."

This must be the specimen of which Retzius wrote in Retz. Obs. **4**, 11 " Cyperus enim Rottböllii, quem benevolentia Cl. König possideo." It would seem, therefore, that it was presented by Rottboell to König and given by the latter to Retzius. It is an American and not an Indian species.

I take this opportunity to correct two errors in the paper quoted above :—

No. 276, page 71, should read *Saccolepis*.

No. 289, page 72, *Dimeria avenacea* is a new combination for *D. pusilla* Thw. and not for var. *pallida* Thw. of the latter.

C. E. C. FISCHER.

Pseudogeneric names.—Names resembling generic names have been given by certain authors to particular *species*. Thus *Phaeocephalum* Ehrh. was a unitary specific name given by Ehrhart (Beitr. 146) to *Schoenus fuscus* L., and *Leucocoma* Ehrh. is a name for *Eriophorum alpinum* L. Another class of unitary specific name is exemplified by the Abyssinian plant-names published by Bruce (Travels, **5**, 1–80 : 1790), e.g. " Sassa " (l.c. 31) and " Gaguedi " (l.c. 52). *Sassa*, as a generic name, dates from Gmelin, Syst. **2**, 1038 (1791), and must be attributed to Gmelin. *Gaguedi* Bruce is mentioned in the list of Nomina generica conservanda as a synonym of *Protea* R.Br. (1810), but has no claim to recognition under the International Rules.

Seventy-eight Indian species were described under their Sanskrit names by Sir William Jones (Asiatick Researches **4**, 240–312 : 1795). Some of these Sanskrit names of species were apparently taken, by various authors, for scientific names of genera, and were included as such in the Index Kewensis. Thus *Syama* Jones is cited in the Index as a synonym of *Pupalia* Juss., and *Cuveraca* Jones as a synonym of *Cedrela* P. Br.

Some of these *unitary specific names* proposed by Jones were adopted as *generic names* by later authors. Thus the name *Vanda*, given by Jones to a *species* doubtfully identified by him with *Epidendrum retusum* L. (now *Rhynchostylis retusa* Bl.), was adopted as the name of a *different genus* by Robert Brown in Bot. Reg. **6**, t. 506 (1820). The name *Madhuca*, given by Jones (l.c. 285) to a species identified by him with *Bassia longifolia* L., was adopted as a generic name by Gmelin, Syst. **2**, 799 (1791). T. A. SPRAGUE.

Ceratophytum tetragonolobum.—The practice once widely prevalent of basing new species on imperfect material is a hindrance to the progress of systematic botany. This is well illustrated by the case of *Bignonia tetragonoloba* Jacq. Fragm. 36, t. 40 (1800–1809), which was based on a single fruit received by Jacquin from Caracas, Venezuela, with the description " *Bignonia nova, quae frutex scandens, semper florens, flore albo odorato, foliis ternatis.*" Jacquin's description of the fruit and seed was as follows :—

" Siliqua a decem ad duodecim uncias longa, obtuse tetragona cum angulis rotundatis, crassissima, sublignea, bivalvis cum dissepimento medio parallelo, valvulis ultra unciam latis, utrinque simul ad suturas tres quartas unciae partes aequantibus, ad tactum ob tubercula minima scabriuscula, ad lentem praeterea punctis sive

atomis nigris adspersa, caeterum fusca. Semina numerosa, plana, fusca, utrinque excurrentia in alam oblongam hyalinam obtusamque. Repraesentatur siliqua integra ; tum etiam valvulae pars summa interna, semen, et aucta portio superficiei siliquae."

This description was naturally insufficient to determine even the genus of *Bignoniaceae* to which the plant belonged, and *B. tetragonoloba* has accordingly remained up to the present among the "species dubiae." The figure of the fruit, however, was recently recognized by one of us at sight as representing a species of *Ceratophytum*, a genus established by Pittier in 1928, and revised by us in Kew Bull. 1933, 321–323. The species must, therefore, be known in future as **Ceratophytum tetragonolobum** (*Jacq.*) *Sprague et Sandwith*, comb. nov.

Two species of *Ceratophytum* were previously known, namely *C. capricorne* Pittier and *C. tobagense* (Urb.) Sprague et Sandwith (*C. brachycarpum* Pittier). These are closely related, but have been distinguished hitherto by the shape of the leaflets, the length of the anther thecae, and by certain characters of the capsule and seed. Comparison of *C. tetragonolobum* with *C. capricorne* and *C. tobagense* is necessarily confined to the latter characters and yields the following result.

C. tetragonolobum : Capsule 25–30 cm. long (27·5 cm. in the figure), lepidote-punctate. Seeds 5·5 cm. broad.

C. capricorne : Capsule about 40 cm. long, non-punctate. Seeds 4·5–5 cm. broad.

C. tobagense : Capsule 16–27 cm. long, lepidote-punctate. Seeds 3·3–4 cm. broad.

This result is inconclusive owing to the very incomplete data available for *C. tetragonolobum*. It strengthens a suspicion, however, which we had previously entertained, that when further material comes to hand, it may be necessary to unite the two species distinguished by Pittier, since *C. tetragonolobum* resembles one of them in the fruit characters, and the other in the dimensions of the seed. So long as Pittier's two species are upheld, they will continue to bear the names *C. capricorne* and *C. tobagense* respectively, since neither can be definitely identified with *C. tetragonolobum*. If and when they are united, however, the combined species will be known as *C. tetragonolobum*.

T. A. SPRAGUE and N. Y. SANDWITH.

Paintings of Riviera and Alpine plants.—A series of 658 water-colour illustrations of wild flowers from the Riviera and various parts of the Alps, executed by the late Miss Sidney E. Forster, has been presented by her niece, Miss Alice E. Pepys. The figures, which are natural size and on separate cards, measuring $6\frac{1}{4}$ by $4\frac{1}{4}$ in., appear to be very faithful to nature, and botanical details are carefully shown as far as they are visible without magnification. Many of the figures are charming studies.

The cards are arranged in six leather-covered boxes, four containing 445 paintings of Riviera plants, and the remaining two including 213 paintings of plants from Switzerland, Savoy, Bavaria and the Black Forest. The cards are arranged in systematic order starting with *Ranunculaceae*, and there is a list of the contents in each box. The series of paintings of Riviera flowers will be extremely useful to botanists intending to visit that region for the first time, as most of the characteristic plants and a fair proportion of the rarer species are included.

New combinations from the Hand-List of Trees and Shrubs.—The following new combinations are published here prior to their appearance in the forthcoming new edition of the "Hand-List of Trees and Shrubs":—

Cytisus Reverchonii (*Degen et Hervier*) *Bean*, comb. nov.
Sarothamnus Reverchonii Degen et Hervier in Magyar Bot. Lap. **5**, 6 (1906).

Neillia glabrata (*Rydberg*) *Bean*, comb. nov.
Opulaster glabratus Rydberg in Bull. Torr. Bot. Club, **31**, 558 (1904).
Physocarpus glabratus (Rydberg) Rehder in Mitteil. Deutsch. Dendrol. Ges. **1915**, 221.

Neillia intermedia (*Rydberg*) *Bean*, comb. nov.
Opulaster intermedius Rydberg in Britton, Man. Fl. N.U.S. 492 (1901).
Physocarpus intermedius (Rydberg) Daniels in Univ. Missouri Studies, Sc. ser. 1, no. 1, 149 (1907).
Physocarpus Ramaleyi A. Nelson, New Man. Bot. Centr. Rocky Mts. 248 (1909)—partim.

Neillia stellata (*Rydberg*) *Bean*, comb. nov.
Opulaster stellatus Rydberg in Small, Fl. Southeast States, 513 (1903).
Physocarpus stellatus (Rydberg) Redher in Journ. Arnold Arb. **1**, 256 (1920).

Veronica brachysiphon (*Summerhayes*) *Bean*, comb. nov.
Hebe brachysiphon Summerhayes in Kew Bull. 1927, 397.

The Genus Diaporthe.*—The number of species included in the genus *Diaporthe* since its definition by Nitschke in 1870 is over 650. Many of these differ in nothing but host plant, while, on the other hand, several species with little to distinguish them have sometimes been described on the same host. Until recent years knowledge of conidial connections was purely observational, and little was known of life-histories. Following on a series of papers on the group in which studies based on careful cultural work are described, Dr. Wehmeyer has now produced a general account of the genus.

*By L. E. Wehmeyer. The genus Diaporthe and its Segregates. University of Michigan Press, pp. xii+349, 18 plates. 1933. $3.50.

As far as possible he has examined authentic material of the species mentioned. The amount of work involved is enormous. The author is to be congratulated on the courage which led him to undertake it and on the very satisfactory presentation of the results of his studies.

After an introduction giving an account of morphology and development in the genus *Diaporthe*, and such facts as are known of its geographical distribution, the main body of the work is occupied by full descriptions of all the species recognised by the author, with synonymy, host relations, and mention of conidial connections. 107 species (of which 7 are new to science) are thus described, distributed in five genera, namely *Diaporthe*, *Cryptodiaporthe*, *Diaporthella*, *Apioporthe* and *Diaporthopsis*. The old divisions of *Diaporthe* into *Chorostate*, *Euporthe* and *Tetrastaga* are not maintained. 88 species are excluded from the genus, 18 are listed as doubtful, and 151 were not seen by the author. The remainder are reduced to synonymy. The species maintained are separated on morphological grounds, hence many names which are regarded by the author as merely host forms occur as synonyms. Under *Diaporthe eres* Nits. for instance, about 128 described species, on 68 different host-plants, are included. At the same time the synonymy is given under each host, so that should later experimental work prove the validity of any of such forms as species or varieties it would be easy to segregate them. In such cases of wholesale reduction the author has perhaps wisely decided to retain for the species the name which is most commonly used. To attempt to find the earliest valid epithet would be at present an almost impossible task apart from the fact that opinions may differ as to the suggested synonymy.

The author is not always accurate in the matter of citation. Throughout the work the date of Nitschke's " Pyrenomycetes Germanici " is given as 1867, whereas *Diaporthe* occurs in the " Zweite Lieferung " of the work, which was not published until 1870. Probably the mistake is due to the use of a volume from which the second title-page had been removed before binding. Similarly in the case of Fries' " Summ. Veg. Scand." the date is given as 1846, whereas the references are to the " Pars posterior," published in 1849.

One point of nomenclature requires comment, since various writers have followed the same procedure, and it is liable to cause much confusion. The author has made the combination *Cryptodiaporthe salicella* (Fr.) for a second time, on the ground that when Petrak made the combination he was dealing with *C. salicina* (Curr.) and not with the true *Sphaeria salicella* of Fries. This procedure is contrary to the International Rules as they now stand. It is unfortunate that the full text of the Rules as revised at Cambridge has not yet been published, but it is possible to gather from the report of the discussions that there is a clause inserted in the rule regarding transference of a species from one genus to another to the effect that when the author of a new combination applies it

erroneously in its new position to a different species, the combination must be retained for the type to which the specific epithet was originally given. Thus the name *Cryptodiaporthe salicella* (Fr.) Petrak must apply to Fries' species. If Dr. Wehmeyer is right, Petrak's description (but not his name) is referable to *C. salicina* (Curr.), but this has no influence on the validity of the new combination *Cryptodiaporthe salicella* (Fr.) Petrak.

The format of the book is good. The type is clear and there appear to be no typographical errors. The descriptions are accompanied by numerous figures showing habit and details of spores. The volume is heavier to handle than it need have been owing to the unnecessarily wide margins and the similarly unnecessary use of surfaced paper for the plates. The work is one which should be in every mycological library. It will be of the greatest value to both pure mycologists and plant pathologists, and it is to be hoped that in time other genera of the *Pyrenomycetes* will be dealt with in a similar thorough manner. E. M. WAKEFIELD.

The Flora of Iceland and the Faeroes.*—The publication of a handbook of the flora of Iceland and the Faeroes will be welcomed not only by those who seek information about the plants of these islands, but by students of the Arctic flora in general. More especially is this handbook of value since it is based on the very extensive knowledge of Arctic plants possessed by the late Professor C. H. Ostenfeld, whose untimely death in 1931 prevented him from finishing the book. However, in the able hands of Mr. J. Gröntved this Flora has now been completed.

The book is a handy size for use in the field. It contains an analytical dichotomous key to the families based on somewhat unorthodox, but eminently practical lines. Under each family are keys to the genera and in some cases to the introduced species. Descriptive keys to the native species, the remaining introduced species and to the hybrids are given in the text, the more important taxonomic characters being supplied as well as notes on habitat, frequency and distribution. The usefulness of some of the longer keys might have been increased had references been given to the page where the contrasting paragraph occurs. Popular names in use both in Iceland and in the Faeroes are quoted, and are indexed separately, as are the generic names. At the end there is a glossary of common botanical terms. For those ill-acquainted with the geography of these islands, sketch maps are provided showing the more important localities.

The arrangement of families follows in general Engler's system, but there are certain modifications. *Narthecium* and *Tofieldia* are placed in the *Colchicaceae* and *Paris* in the *Convallariaceae*. In the *Orchidaceae* the genus *Habenaria* is retained for species now usually

*By C. H. Ostenfeld and Johs. Gröntved. Levin & Munksgaard, Copenhagen, 1934. Pp. 195, 2 maps, Dan. Cr. 6.50.

recognized as belonging to other genera, viz. *Platanthera*, *Coeloglossum* and *Leucorchis*.

The printing and finish of the book are good and typographic errors are few. The text is in English. Certain of the recommendations regarding spelling contained in the International Rules have not been observed by the authors. For example *Borraginaceae*, *Bartschia* and *Coralliorrhiza* are given in place of *Boraginaceae*, *Bartsia* and *Corallorrhiza*; *Geranium silvaticum* is used instead of *Geranium sylvaticum*, which was the original spelling deliberately adopted by Linnaeus; capital letters are not used for old generic names employed as specific epithets; the gender of *Orchis* is wrongly given as masculine, and *Oenotheraceae* is used for *Onagraceae*, the latter being the correct name for the family under the Rules. These, however, are but minor blemishes not detracting seriously from the value of the work. E. MILNE-REDHEAD.

The Care and Repair of Ornamental Trees.* —The author of this book very rightly directs attention to the ill-health and premature decay of many trees through inattention to necessary pruning and repair work after injury by storms, and to the necessity for bracing together heavy limbs to enable them to withstand gusty winds. In many directions it is possible to find apparently healthy trees with decayed cavities in trunks and branches, and it is upon such trees that the author advocates repair work, not upon trees that are in an advanced state of decay, for no matter how much attention they may get they can never be improved to any appreciable extent. Such trees should be removed and replaced by young ones.

The book opens with a chapter dealing with physiological questions concerning trees and is followed by a chapter on pruning. The second chapter is chiefly devoted to old trees and the work is clearly described, special emphasis being laid upon the necessity for reducing the weight of very heavy branches. Why the author is so careful to recommend tools of foreign manufacture is a mystery, for first-rate tools suitable for the purpose are made in this country and have been in use at Kew for more than forty years.

He then discusses dressings for wounds, various kinds of material for filling cavities, the treatment of backward trees, fungus diseases and insect pests, transplanting large trees, the bolting and bracing of heavy branches, trees and the law, planting and care of street trees, road planting and other subjects.

In confining himself very largely to the treatment of old ornamental trees, the author has neglected a vital question, namely the production of good ornamental trees by proper and regular pruning in early years. It is only by such attention that many trees growing in open positions can be induced to form a good

* By A. D. C. Le Sueur, B.Sc., F.S.I., Dip. For. Published by Country Life Ltd., 20, Tavistock Street, London, W.C.2. 1934. Pp. xiv+257, 42 illustrations. Price 10*s.* 6*d.* net.

central trunk and a uniform head of branches. Improperly developed trees are more liable to storm injury than those of uniform development. It would, indeed, have been more useful had he given particulars regarding the pruning of growing trees rather than a somewhat inadequate description of the transplanting of large trees, for the latter is highly skilled and expensive work that cannot be properly dealt with in a few pages. Apart from this the book gives a very accurate description of work connected with old ornamental trees, and it can be recommended to all who are interested in the subject. The book is well printed on good paper and is illustrated by numerous photographs. W. DALLIMORE.

World Sugar Production and Consumption.*—The experience of the author when Lecturer on the sugar trade at the City of London College emphasised the need of a book of convenient size giving a comprehensive survey of the world's production of sugar from cane and beet, with special reference to the economic-geographical aspects. The present volume fills this need with conspicuous success. Commencing with a chapter discussing in a general way the world trade in sugar, the author then gives details regarding the cultivation of the sugar cane and preparation from it of cane sugar. General conditions controlling cane sugar production are then dealt with, including such problems as sets, soil, climatic factors, labour, work in the factory, etc. Chapter three concerns the general conditions attending beet sugar production, including climate, soil, labour and other questions. The various countries most interested in cane sugar are then passed in review and problems incidental to each one are discussed. Some further particulars are then given on beet sugar, the refining industry, the competent factors of consumption, and the future prospects of consumption and production. Although a small book, it is full of useful information and will be found to be of value alike to growers, manufacturers, importers and users of sugar. W. DALLIMORE.

Descriptive Dictionary of Phanerogamic Genera.—Systematic botanists who are not fortunate in living within reach of a great Herbarium and Library are faced with many difficulties in determining even the genera of the plants with which they have to deal. So many new genera are being described and others restored to generic rank, that a large array of taxonomic works has hitherto been needed for the purpose. So far as genera are concerned, the problem has been largely solved by the publication of M. Albert Lemée's great dictionary, of which the fifth volume (Pal-Sci) has

*World Sugar Production and Consumption, by C. J. Robertson, B.Sc., M.A., Ph.D. John Bale, Sons & Danielsson, Ltd., Oxford House, 83–91, Great Titchfield Street, London, W.1, 1934, pp. vi+142, price 5s. net.

just appeared.* This work contains descriptions in French of all recognized genera of Phanerogams with references to their places of publication and revision. All synonyms are also assigned to their appropriate genera in accordance with the results of the latest research. The fifth volume contains an appendix (A–R) containing names published too late for inclusion in the general alphabetical sequence. The occurrence in the Supplement of numerous genera published in 1933 is an indication of the up-to-date character of the work.

The Culture and Marketing of Tea.†—In his preface, the author states that this book does not pretend to be an exhaustive treatise on tea ; nevertheless, after fourteen years' experience in north-east India, he has produced a comprehensive volume which will be of interest and service to all connected with the industry.

The whole subject is treated in four parts, the first of which gives a general account of the tea plant and includes chapters on suitable climates and soils. It may be mentioned that the citation of the botanical name of the plant is not correct : it should be *Thea sinensis* L.—not *Thea sinensis* (L.) Sims.‡

The second part deals with the chemistry and pharmacology of tea and the changes taking place in the various processes of manufacture. Part three, which takes up about half the book, deals with the tea countries of the world. The first chapter, on tea in China, tells us that the first authentic account of tea was written by Lo-Yu, who lived about A.D. 780. China gave both the word " tea " and the beverage to the world, and " the words *te*, *Chia* and *Cha* denote tea in various Chinese dialects and in one or other of these forms has passed into most other languages." Four chapters in this part deal with tea in north-east India, and it is on this region that the author speaks with real authority and gives a clear account of the area itself, the development of the industry, the actual culture of the plant and the manufacture of tea.

There is also a chapter on terms used in describing teas, and others on tea in Japan and Formosa, north and south India, Ceylon and Java.

Part four is entitled " The British Tea Trade " and deals with the marketing, production and consumption of tea. London is

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*Dictionnaire descriptif et synonymique des genres de plantes phanérogames, par Albert Lemée. Tome v: Pal–Sci. London, Dulau & Co., 32, Old Bond Street, 1934, pp. iii+1152. Price Fr. 250.

†By Dr. C. R. Harler. Humphrey Milford, Oxford University Press, London, 1933. Pp. xi+389, 8 plates and 2 maps. Price 12*s.* 6*d.*

‡International Rules of Botanical Nomenclature, Ed. 2, Art. 41. " An alteration of the diagnostic characters or of the circumscription of a group does not warrant the citation of an author other than the one who first published its name."

the most important market for tea and it is practically the centre of the trade for all countries. The market is concentrated in Mincing Lane and its immediate neighbourhood, where the stocks at any one time may lie between 100 and 200 million pounds and upwards.

Now, out of a world's production of about 900 million pounds, the United Kingdom takes approximately half, and Dr. Harler states that at the present time the annual tea consumption per head in Great Britain is about 9 lbs. In Russia, in normal times, it is about 3·7 lbs. in the towns, and 0·37 lbs. in the villages; in Siberia 1·8 lbs., and in Russian Central Asia and Turkestan 2·7 lbs.

A correspondent in the "Tea and Coffee Trade Journal," Jan. 1934, p. 66 gives the United Kingdom as the largest consumer in Europe—9·87 lbs. per person per annum—at the same time quoting figures for Germany of 0·20, Italy 0·009, France 0·09 and Holland 3·17 lbs. per head respectively.

An outstanding feature of the work under review indicates that the production is largely from Empire sources:—India (in 1931) 807,000 acres producing 394 million pounds; Ceylon (1929) 470,000 acres producing 251 million pounds; Africa (1928) 8900 acres producing 1,745,000 pounds in Nyasaland; 5,600 acres producing 150,000 pounds in Kenya and 2000 acres producing 800,000 pounds in Natal—all showing great possibilities of expansion.

J. H. HOLLAND.

Nature Teaching.*—The sixth edition of this useful little book differs little from the fifth, which was reviewed in the "Kew Bulletin" for 1925. The opportunity has been taken to bring the information in the chapters on insects and fungi into line with recent research and the section on plant habitats has been revised. The lists of plants in the appendices have also been brought up to date. Teachers of nature-study—for whom it is primarily intended—and senior students in the tropics will continue to find this book both helpful and interesting.

Florae Siamensis Enumeratio.†—The lamented death of Prof. W. G. Craib, the author of the previous parts of this publication, occurred when part 2 of vol. 2, now issued, was in the press. This latest part completes the *Rubiaceae* and includes also the families *Valerianaceae* and *Dipsacaceae*, the two latter represented each by a single species. It comprises 216 species and 27 varieties of which

*By Sir Francis Watts. The West India Committee, 14 Trinity Square, London, E.C.3. 6th Ed. 1934, pp. vii+216, text figs. 22. Price 3*s.* 6*d.*

†A list of the plants known from Siam with records of their occurrence, by W. G. Craib. Vol. 2, part 2. Published under the auspices of the Siam Society by the Bangkok Times Press Ltd., 1934, pages 147–234+vi. Price 12*s.* 10*d.* or 7 *Tcs.*

78 species and 17 varieties by Prof. Craib and 8 species by Miss Geddes were first described for this work in the "Kew Bulletin."

Together with this part a 6-paged leaflet of errata to vol. 1 is issued.

A prefatory note gives the welcome information that the enumeration is to be continued under the editorship of Dr. A. F. G. Kerr, on whose collections and notes so much of the past work has been founded. C. E. C. FISCHER.

Further note on the genus Kraussia.—In K.B. 1931, 254–7, the writer published a short account of the genus *Kraussia* Harv., in which three species were enumerated. Since then attention has been increasingly focussed on the artificiality of the primary division of the *Rubiaceae* by means of the septation and number of ovules per loculus of the ovary. Examination of the genus *Rhabdostigma* Hook. f. with this idea in mind, reveals the fact that there is really no essential difference between the two genera *Kraussia* and *Rhabdostigma* and the latter thus falls into synonymy, the species being redistributed as shown below. The specimens cited are deposited in the Kew Herbarium.

Kraussia *Harv.*—Bullock in Kew Bull. 1931, 255.

Rhabdostigma Hook. f. in Benth. et Hook. f. Gen. Pl. **2,** 109 (1873); Hiern in Oliv. Fl. Trop. Afr. **3,** 130 (1877); K. Schum. in Engl. Pflanzenw. Ost-Afr. **C.** 383 (1895); et in Engl. et Prantl, Naturl. Pflanzenfam. **4,** 4, 87 (1897).

Galiniera Baill. Hist. Pl. **7,** 431 (1880), quoad syn., non Del.

Kraussia Kirkii (*Hook. f.*) *Bullock,* comb. nov.

Rhabdostigma Kirkii Hook. f. in Benth. et Hook. f., Gen. Pl. **2,** 109 (1873); Hiern. in Oliv. Fl. Trop. Afr. **3,** 131 (1877); Oliv. in Hook. Ic. Pl. t. 2275 (1893); K. Schum. in Engl. Pflanzenw. Ost-Afr. **C.** 383 (1895) et in Engl. et Prantl, Naturl. Pflanzenfam. **4,** 4, 87 (1897).

TANGANYIKA TERRITORY:—*Kirk* 105! *Holst* 2982! *Goetze* 108! *Musk* 73! A fruiting specimen from Mafia Island, *Wallace* 817, may belong here.

Kraussia Schlechteri (*K. Schum.*) *Bullock,* comb. nov.

Rhabdostigma Schlechteri K. Schum. in Engl. Bot. Jahrb. **28,** 68 (1899).

Kraussia incerta Bullock in Kew Bull. 1931, 256.

Add to *exsiccata* in K.B. 1931, 256, under *Kraussia incerta*:—TRANSVAAL: *Schlechter* 11605 (type number in Herb. Kew.)! *Pole-Evans* 3416 (25)!

A. A. BULLOCK.

Sir Lionel Phillips.—We much regret that, owing to erroneous information received at Kew, the announcement of Sir Lionel Phillips' death appeared on p. 138 of K.B. 1934. We are happy to learn that Sir Lionel is alive and well.

Birthday Honours.—We note with pleasure that Mr. A. D. Cotton, F.L.S., has been made an Officer, and Messrs. W. E. Broadway and F. G. Harcourt, Members of the Most Excellent Order of the British Empire.

The Toxicology of Plants in South Africa.—In the review of this work which appeared in the last number of the "Kew Bulletin" we omitted to state that copies can be obtained from Messrs. Gordon and Gotch, Ltd., Gordon House, 75–79, Farringdon Street, E.C.4.

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